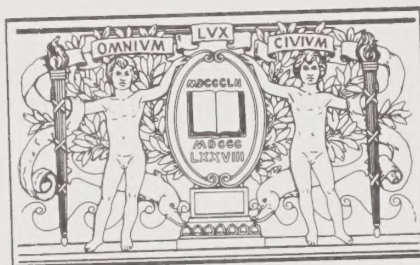


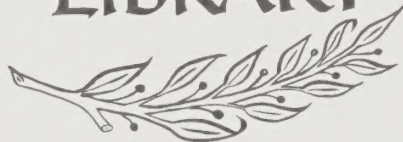
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PLATE ILLUSTRATIONS
FROM WORK OF
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PROSPECTUS OF THE BRICKBUILDER FOR 1900

ONE of the new features of our work for 1900 will be the Half-Tone Plate Form, which will comprise six full-page half-tone illustrations each month. These will be made from photographs of the very best examples of American and foreign brickwork, and will be printed on an extra heavy coated paper, each illustration being on a separate sheet, size 10½ x 13½ ins.

The standard already set, in our Plate Form of Scale Drawings, will at least be maintained during the coming year, and carefully selected working drawings, showing elevations, details, plans, etc., from the best offices in the country, will be illustrated in this form. In addition to these, there will be reproduced measured drawings of some of the best examples of Italian brickwork, made especially for us by men holding the leading traveling scholarships.

Among those who will contribute to our columns during the year are: —

Dankmar Adler	George R. Dean	Arthur Heun	William T. Partridge	R. C. Spencer
William A. Bates	Wilson Eyre, Jr.	W. G. Horseman	Henry B. Pennell	Bertrand E. Taylor
Claude Fayette Bragdon	Ernest Flagg	John Galen Howard	Dwight H. Perkins	Henry Tanner
Arthur S. Brooke	J. K. Freitag	Dr. Henry M. Hurd	Corydon T. Purdy	Edmund M. Wheelwright
R. C. Carpenter	Cass Gilbert	Walter H. Kilham	Edward Robinson	Frank L. Wright
J. W. Case	Alfred H. Granger	George D. Mason	Dr. G. H. M. Rowe	T. C. Young
	Thomas Hastings	Louis Mullgardt	Edgar V. Seeler	

NEW FORM OF
72 FULL-PAGE
HALF-TONE
ILLUSTRATION

PLATE FORM
OF SCALE
DRAWINGS

THESE MEN WILL
WRITE FOR OUR
COLUMNS
DURING 1900

Leading Articles for the Year

Following our yearly custom of inviting a number of well-known architects to contribute each an article which shall be a treatment of some one building of the popular class, according to a program giving certain requirements, we have chosen for this year what we believe to be two especially interesting types: —

First — A Village Inn, to be built of Brick and Terra-Cotta

The contributors will be: —

William A. Bates . . . New York	John Galen Howard (Howard & Cauldwell), New York
Wilson Eyre, Jr., . . Philadelphia	Thomas Hastings (Carrere & Hastings), . . New York

A VILLAGE INN

Second — A Village Bank, to be built of Brick and Terra-Cotta

The contributors will be: —

Claude Fayette Bragdon, Rochester, N. Y.	Edgar V. Seeler Philadelphia
Louis Mullgardt St. Louis	Frank L. Wright Chicago
Dwight H. Perkins Chicago	T. C. Young (Eames & Young) . . St. Louis

A VILLAGE
BANK

These articles will be illustrated from drawings and sketches of elevations, plans, and details.

The Planning of Hospitals

Under this general heading there will be published five papers treating of the best methods for hospital planning to meet the modern requirements of medicine and surgery. Three of these papers will be contributed by the following-named architects: —

ERNEST FLAGG, BERTRAND E. TAYLOR, EDMUND M. WHEELWRIGHT.

Additional interest will be given this series by the papers treating the subject from the practical standpoint, from

HENRY M. HURD, M. D., Supt. of Johns Hopkins Hospital, Baltimore, Md., and
G. H. M. ROWE, M. D., Supt. Boston City Hospital, Boston, Mass.

HOW SHOULD
HOSPITALS BE
PLANNED

English Brickwork

Under this heading there will be published two or three articles, reviewing some of the more interesting work which has been recently done by the better known English architects. These articles will be amply illustrated from photographs and drawings.

By W. G. Horseman and Henry Tanner
London, England

INTERESTING
ENGLISH
BRICKWORK

Byzantine Brick Building

Mr. Pennell's treatment of this subject will be both historical and practical, affording an excellent opportunity to introduce a number of his charming pen-and-ink sketches.

By H. B. Pennell
Rotch Scholar

PEN-AND-INK
WORK BY
PENNELL

Minor Brickwork of the Apennines

There will be two articles upon this subject, illustrated from photographs and sketches made by Mr. Kilham during his course of study in the central Italian towns.

By Walter H. Kilham
Rotch Scholar

SKETCHES BY
KILHAM

The More Important Brick Chateaux of France

There will be three articles in this series which will follow in sequence the series by Mr. Partridge, now being published in THE BRICKBUILDER. Illustrated from photographs and sketches.

By William T. Partridge
Rotch Scholar

PARTRIDGE'S
SERIES
CONTINUED

Old Dominion Brickwork

By Arthur S. Brooke

In two articles Mr. Brooke will describe and illustrate some of the more noteworthy examples of that interesting brick architecture which is found in the "Old Dominion." Illustrations will be made from measured drawings and sketches which have never before been published.

The Brick Architecture of Lake Forest

By Arthur Heun

This beautiful suburb of Chicago is noted for its interesting domestic architecture, a considerable portion of which is brick. In two illustrated articles Mr. Heun will present the best of this type.

The Railway Station Work of Frost & Granger

By Alfred H. Granger

The work recently done by this firm in railway stations has been both extensive and of an unusually interesting character. Mr. Granger's contribution will consist chiefly of a discussion of the problems which are met in work of this type, with illustrations from photographs and drawings of the more interesting examples.

The Warehouse Work of Eames & Young

Not only because of good design, but from the fact that a large group of warehouses (accommodating various kinds of wholesale business) arranged in a manner to insure the economical handling of merchandise *en transit*, located in a section of the city where land values were low, is this work at Cupples Station, St. Louis, made interesting. It will be fully described and illustrated.

American Farm Houses

By R. C. Spencer, Jr.

Mr. Spencer has recently made a special study of this subject, and gathered much interesting data regarding the various types of this class of buildings. Needless to say his contribution will be interesting, chiefly in pointing out what is needed, rather than what we already possess, in the way of well planned, well built farm houses. As a sequel to this article we shall hold a competition for "An American Farm House," regarding which a more detailed announcement is made elsewhere in this Prospectus.

"Progress before Precedent"

By George R. Dean

Is this maxim of the Architectural League of America finding favor with the coming men of the Middle West? Mr. Dean's answer to this query will be followed by a brief expression of opinion from some twenty or more well-known architects on the question, Do you consider "Progress before Precedent" expresses a worthy ideal for American architects?

Heating and Ventilating Schoolhouses

A paper

By R. C. Carpenter
Cornell University

Foundations in Chicago

A paper

By Dankmar Adler

Series of American Architects

For details, see page 3, January number

Six Competitions for Cash Prizes

During the year we shall hold the following competitions:—

- I. **Brick Gateway and Lodge to Gentleman's Estate** (see program in January number). To be judged and criticized by Cass Gilbert.
- II. **Entrance to an Art Gallery.** To be judged and criticized by Edward Robinson, Curator of Classical Antiquities, Museum of Fine Arts, Boston.
- III. **Cozy Corner and Fireplace in Home Library.** To be judged and criticized by George D. Mason.
- IV. **A Farm House.** Name of judge to be announced.
- V. **Crematory.** To be judged and criticized by J. W. Case.
- VI. **To be announced later.**

Cash prizes for each competition divided as follows: First prize, \$25; second prize, \$15; third prize, \$10.

Engineering Problems Relating to Architecture

During the year there will be published several papers especially prepared for our columns by prominent engineers, on subjects of live interest to architects.

Fire-proofing Department

This department is maintained for the purpose of furnishing that class of material which shall be an aid to architects and builders who recognize the necessity of care in successfully employing fire-proofing, and to that end a series of carefully prepared papers will be published during the year.

Selected Miscellany

This department will be given over very largely to illustrations of both exteriors and interiors of recent interesting work in brick and terra-cotta. Under this new title, which gives greater scope, it will be our endeavor to furnish that class of material which shall enhance the value of our work as a whole.

Our editorials are contributed by a staff of able writers, and by them current topics of interest will be discussed

The Brickbuilder is published monthly at Boston, Mass.

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Publication Office, 85 Water Street



RESIDENCE, WASHINGTON TERRACE, ST. LOUIS, MO.
ERNEST YOUNG, ARCHT.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

	PAGE		PAGE
Agencies.—Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

HAPPY NEW YEAR.

THE BRICKBUILDER with this number presents to its readers a new leaf in its history, and one which we believe will prove satisfactory to those who have supported us in the past. It has been our aim to make of THE BRICKBUILDER an architectural journal, which, while considering to the fullest extent the practical sides of the particular form of construction which we specially represent, shall bring out the artistic possibilities of the material which is so abundantly at the hand of man for building operations.

Of the changes made, they best speak for themselves, and we can only hope that in them may be recognized a desire on our part to send forth an architectural publication which shall be second to none.

THE MAN IN THE STREET.

IT is often assumed that if architects' work were to be judged by architects, or at least by those who have had some training in the subject, there would be more incentive to study design, and the conditions would tend to better work. The judgment of the casual passer-by, who views the results of architecture from the standpoint of the street, is something which is very often looked upon with scorn by the average architect; and yet, after all, the influence of the uneducated is undoubtedly quite often a very potent restraining factor in architectural design. If we could all do things in

just the way that seemed to us best, and our judgment were not subjected to revision by the unsentimental and usually sternly unsympathetic casual observer, it is really a question whether the results would not be as unsatisfactory to ourselves as they are sometimes now when we suffer from the manifestly unjust criticism of those who really know nothing about architecture. As a matter of fact, the architect is very seldom able to push himself much ahead of the average of his generation and his surroundings, and it is doubtful whether the kind of work which did not have some element in it appealing to the average man would not be very likely to be carried to an extreme beyond good taste. Some one has defined a great art work as one which appeals to the greatest variety and number of people. In this sense, a façade which pleases only the educated and highly cultivated few, but is not to the liking of the mass, might be open to serious question as to whether it possessed the elements of real greatness. It is certainly possible to so design a building that it shall appeal both to the educated and to the highly developed. A structure which fully serves its purpose, which awakens a responsive chord in the mind of the trained architect and also engages the attention, develops the thought of the honest mechanic, is surely of the kind which we should all be glad to produce, and it stands to reason that it presents a combination that is quite possible of realization.

BRICK ARCHITECTURE IN THE EAST.

A NUMBER of years ago there appeared in some of the architectural journals illustrations of a series of college buildings which were being erected in one of the lesser East Indian States, from the design of a well-known English architect, in which brick and terra-cotta were used in a highly successful manner to carry out the motives and forms of the native architecture. The attempt to make architecture indigenous rather than imported is altogether praiseworthy, and such an example might with benefit be followed in our own possessions in the far East. If we may judge by the designs which were published in *Harper's Weekly* for a cold storage warehouse it is proposed to erect at Manila by the United States Government, the possibilities of Philippine architecture have not yet been very much considered. The temptation to build an Ecole des Beaux Arts Palace on the shores of the Passig River was too great to be resisted. We hope the time will never come when the whole world will use the same style of architecture. That would imply the inevitable death of true art, for it would mean the quenching of individuality, the stifling

of attempts to observe local necessities and express the same in design, and the absence of individual initiative. The design for the storage warehouse is an excellent one of its kind, and if it were located in Kansas City or on the banks of the Seine we should feel like rejoicing with the happy architect who received the commission, but though architecture in Manila is undoubtedly a very shadowy substance, it is possible for a man with the right architectural endowment to create a building which shall not be merely a transplanted structure, but shall at least seem to be a part of the new development which we hope has begun in the far East.

THE poet tells us that life is real, life is earnest, and things are not what they seem. The latter part of this couplet is especially true as relates to architecture, which is essentially an exponent of the unreal and the conventional, above all, as exemplified by our modern methods of construction. In our buildings we have rightly or wrongly abandoned the ponderosity of construction, which in all past ages has been an essential feature of large architectural creations, and we carry up a wall 125 or even 350 ft. high with a thickness of 12 to 16 ins., crowning the whole with a massive, widely projecting, deeply-cut cornice, composed of small bits of terra-cotta balanced on the ends of the steel construction. This is right or wrong, depending, of course, upon the point of view. We will not undertake to question the wisdom of the new construction, but there is one feature about it which must be borne in mind if a successful design is to be produced. If things are not what they seem, we must look to it that they seem to be what we mean they shall seem to be, and that if we are to produce the effect of a heavy cornice, even though it be made of small members and in its essence is steel skeleton, we must make it seem to be really massive, and our high buildings must have all the appearance of solidity. This is not falsity, though at variance with the theories which Ruskin used to point a moral, but is entirely a matter of pure design. It is the failure to recognize this necessity that makes so many of our tall buildings look attenuated, weak, and hastily thrown together, even though the structures may really be thoroughly well built. The appearance of strength, stability, of endurance, is an essential element of good architecture, and this appearance must be considered even when, as has been done in a very few cases, we build the exterior with walls constructed with expanded metal and one or two inches of concrete.

FIRE LOSS.

THIS country has just passed through an incipient boom. Perhaps its effects have not been felt by all of our readers; nevertheless, for a brief period prosperity was enjoyed, and but for the sudden and unnecessary advance in the price of steel more architects would undoubtedly have profited thereby. This partial prosperity has been felt by many different classes of people, but, if we may judge from what has been told us, it is not shared by the insurance companies. It is a curious reflection upon human nature that good times means a vastly in-

creased amount of fire loss. During 1899, destruction by fire was ten million dollars greater than for the ten months of 1898, and over nineteen million dollars more than during the same period in 1897, and this notwithstanding the constantly increasing number of structures which are erected in such manner as to be at least an effectual barrier to the spread of fire. Furthermore, we are told by one of the most prominent insurance adjusters that the connection between cause and effect is perfectly understood by many of the companies, and that it is a fact that as soon as prosperity begins to strike the country the number of incendiaries who cannot be convicted vastly increases. There never was a time in the world's history when buildings were erected so thoroughly, with so much regard for the resistance of fire, and, conversely, never was there a period when the chances of total loss by fire were so great. We cannot undertake to reconcile these statements; they are simply facts.

THE SMOKE NUISANCE.

THE many efforts which have been made by New England manufacturers to secure such repeal of import duties as shall allow them to draw soft coal from Nova Scotia to replace the anthracite, which is now so generally consumed in Boston, are commendable from every practicable standpoint, except the score of the results which seem to inevitably follow extended use of soft coal in a city. Pittsburgh, Cleveland, and Chicago illustrate the effects of soft coal smoke on building material. While brick and terra-cotta suffer the least from the smoke nuisance, and are the materials on the whole best adapted to resist such influences, there is no material which is proof against it, and none which are not often hopelessly ruined by the combined action of the coal smoke and of the damp, foggy atmosphere which seems to come with it. We have always taken a great deal of pride in the clear atmosphere prevailing in Boston, and, while we heartily sympathize with everything which tends to increase business facilities and add material wealth to the country, we hope that should soft coal ever threaten to become paramount here, it will be possible to devise some more effective form of smoke-consuming device than has existence now in the market.

THE RECENT EXPLOSION AT THE UNITED STATES CAPITOL.

THROUGH the courtesy of Mr. Glenn Brown, architect, of Washington, we have received the report of the architect of the United States Capitol for the year ending June 30, 1899. In this is incorporated the report made by Mr. Brown on the effects of an explosion in the Capitol, Nov. 6, 1898, which occurred in what was before the erection of the present Senate Chamber the Senate wing of the old Capitol building, now the section of the building occupied by the Supreme Court. This part of the structure was built in 1793, was partially destroyed by the British in 1814, and was repaired by Latrobe between 1815 and 1820. The description of the damage caused and the series of forty odd half-tones made from photographs of the damaged structure are extremely in-

teresting in many respects. Without going greatly into detail in the matter, the report sums up the conditions very fairly by stating that there could have been no better practicable construction to resist the explosion and fire than the construction which existed in the portions of the Capitol where the explosion took place. The simple brick vaulting and brick walls and piers, being the heaviest forms of construction, give the greatest weight to resist explosive action and the best material to resist fire. It was only by the modern innovation of the elevator that the fire reached the principal story. The recommendation is made that all damaged vaulting should be taken down and relaid as vaulting, as this is more permanent than iron beams and brick arches.

THE work of the student is always interesting, and if the general average of the work of the architectural department at Cornell is to be measured by the illustrations in the "Annual," which has just been published, the college is certainly deserving of the highest praise. This little brochure forms the best kind of announcement of what Cornell has been doing in architecture. There is only one criticism we would offer, and that is not fairly a matter of the "Annual" itself, but rather of the course of architecture which it illustrates. It seems a mistake to in any wise encourage the so-called special courses, in which a smattering of architecture is, perforce, plastered over the student's mind. Architecture is not acquired in any such way, and it is to be regretted that our architectural schools cannot generally follow the lead of Columbia and the Institute of Technology in discouraging any curtailment of the amount of time to be given in preparation. Of the work of the Cornell department as a whole we would, however, say nothing but good. The selection of the programs and the manner in which they are treated, as shown by the illustrations, are in the highest degree commendable.

SERIES OF AMERICAN ARCHITECTS.

IT is our intention to begin very shortly a series which we believe will be of a great deal of interest to all of our readers, appealing both to the practising architects who have won their positions and to the younger men who are still in the incipient state. We are often in receipt of inquiries from students as to what is the best procedure to properly equip themselves for their life work as architects, and this series is intended to illustrate the path by which successful architects have risen to their positions. We propose to make a selection of a number of the best-known architects throughout the country, presenting in a brief, comprehensive manner a statement of the course of study pursued by them as students, the path which they have followed in their architectural development, and the methods of study which they have adopted, together with a presentation of the work which they have accomplished. In making this selection we shall endeavor to present typical examples rather than necessarily a complete *résumé* of the profession as it now is, and our idea is to epitomize the methods of architectural education which have been followed by our successful architects, making our choice

not necessarily from the architects who have had the largest commissions, but rather from those who are known for the excellence of their work, and varying the list, so that we will show the different kinds of preparation which a young man should consider in fitting himself for architectural work. The standard of the profession has risen enormously within the last generation, and it is no longer possible for a young man to compete seriously for public approval unless he has undergone a long and severe course of study. And while it is not possible to lay out any course which would fit all cases, we can judge from results what methods have been successful, and we are sure that a series such as we propose will afford a record of the best in our American practise.

BRICKBUILDER COMPETITION. I.

AN ENTRANCE GATEWAY AND LODGE FOR A LARGE ESTATE.

PROGRAM.

IT is assumed that a gateway is to be built at the entrance to the grounds of a large private estate. A wall separates the grounds from the highway, extending in a northerly direction; the entrance is recessed from the line of the street, either in a rectangle or semicircle as preferred, and provision is to be made for a driving gate in the center, 9 ft. wide in the clear, and a foot passage each side, 4 ft. wide, though these dimensions need not be followed exactly in the design. On the left of the gateway, looking from the road, there is to be a gardener's lodge, containing a small living room, so placed that the main highway and the road inside the grounds can be visible from its windows, this room being about 16 by 18 ft. There is to be also a kitchen, 10 by 11 ft., a dining room, 11 by 14 ft., and a small entrance hall large enough to afford space for a desk and key rack. In the upper story there are to be two small chambers, with bath room, etc. The lodge may form, if desired, a part of the enclosing wall of the estate. The gateways are to be closed with iron grilles. The ground is supposed to be level. All of the construction is to be such as is adapted to materials in burnt clay.

REQUIRED: A perspective sketch taken from the side of the highway diagonally opposite the lodge, also a sketch plan of first floor only at scale of 1-16 of an inch to the foot, both drawings being in black ink with no wash work, upon a sheet measuring 15½ ins. wide by 10 ins. high. Each drawing is to be signed by a *nom de plume* or device, and accompanying the same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

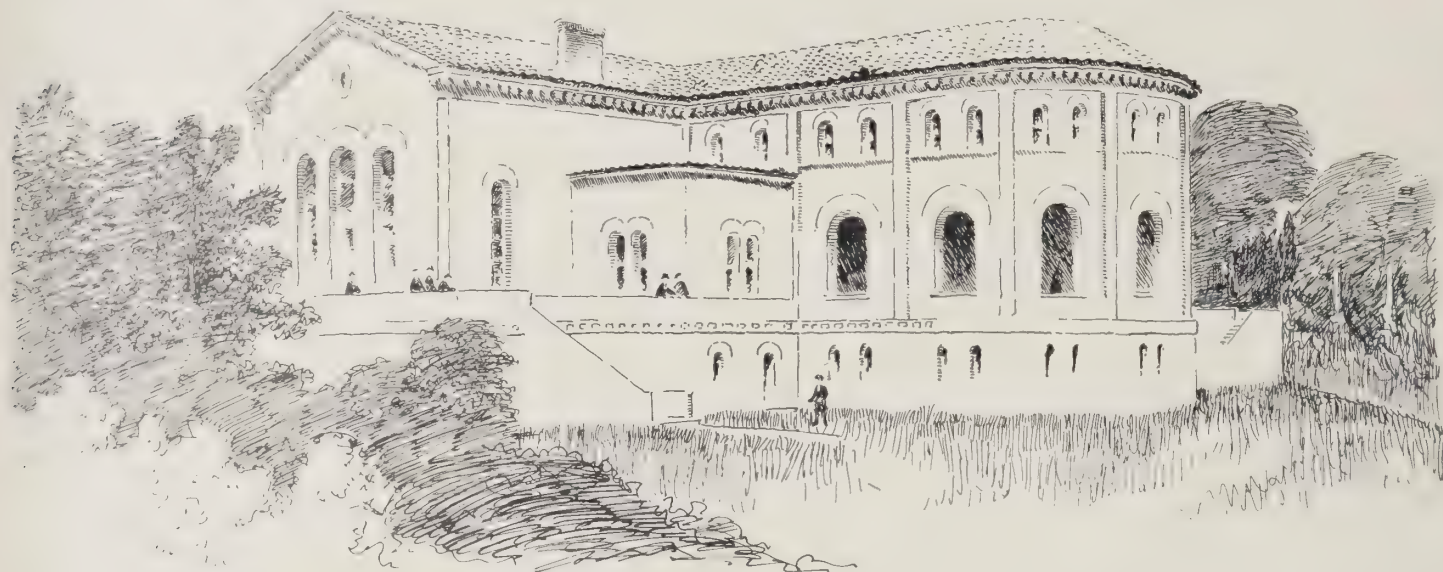
The drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before March 15, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Mr. Cass Gilbert has kindly consented to judge and criticize this competition.

A Public Library, Cost One Hundred Thousand Dollars.

BY ARTHUR G. EVERETT.

A SMALL town among the New England hills offers an interesting little problem in planning a library. Interesting because of the peculiarities of the site and because of the attractiveness of the location of the town

buildings stand quite by themselves, and are in little or no danger from fire from without; and at very slight expense the building may be made sufficiently safe to give reasonable assurance that no damage will result from a fire within. Certainly the gain in attractiveness in the arrangement of the building would fully compensate for the slight care and expense involved by the open stack system. In this instance the closed stack is to be used, and the only books in evidence upon entering the build-



itself, with its outlook across the valley at the foot of the hill upon which it is built. The size of the lot and the general dimensions of the building being determined, there are but two conditions imposed which affect the treatment of the building. One is for the use of "burnt-clay products" for the exterior, and the other, following old precedents, is for a "closed stack." Otherwise one is left fairly free to do as one pleases.

When books are so easily replaced as in these days, it seems unnecessary to continue in use a system devised simply to avoid the confusion and injury resulting from promiscuous handling. A little care and trouble on the part of the attendants in a library, with the addition of a few simple rules for the guidance of the readers, would obviate all difficulties, and make the collection of much more value to the public. An opportunity to go among the books, take them from the shelves and look them through at will, would be a great stimulant to interest in them and result in a better acquaintance with their contents. Nor does the danger from fire seem to be of such importance as to make it necessary to keep all the books behind closed doors, accessible to officials only. Most of our town library

ing will be those placed in the general reading room for reference. The closed stack determines in great measure the arrangement of the plan, for it must be beyond the public parts of the building, and is naturally placed opposite the entrance, on the axis of the building. The two principal rooms are placed, almost as a matter of course, on each side of the entrance hall, and as observation in several libraries leads to the belief that the newspaper and periodical room should be made quite as large as the general reading room, being fully as much in use, the

suggestion that less area will be sufficient for this room is disregarded, and the two rooms are made of equal dimensions. With this much determined, it only remains to place the trustees' room and the room for the exhibition of photographs and paintings where they may be readily reached from the delivery room, to complete the arrangement of the first floor. One thing is added, however, to the first-floor plan, in deference to the outlook from the rear of the building, and this is the covered walk leading from the delivery room on each side and surrounding the stack. As the building stands upon the spot from which the best view of the surrounding country is to be had, it seems as if advan-



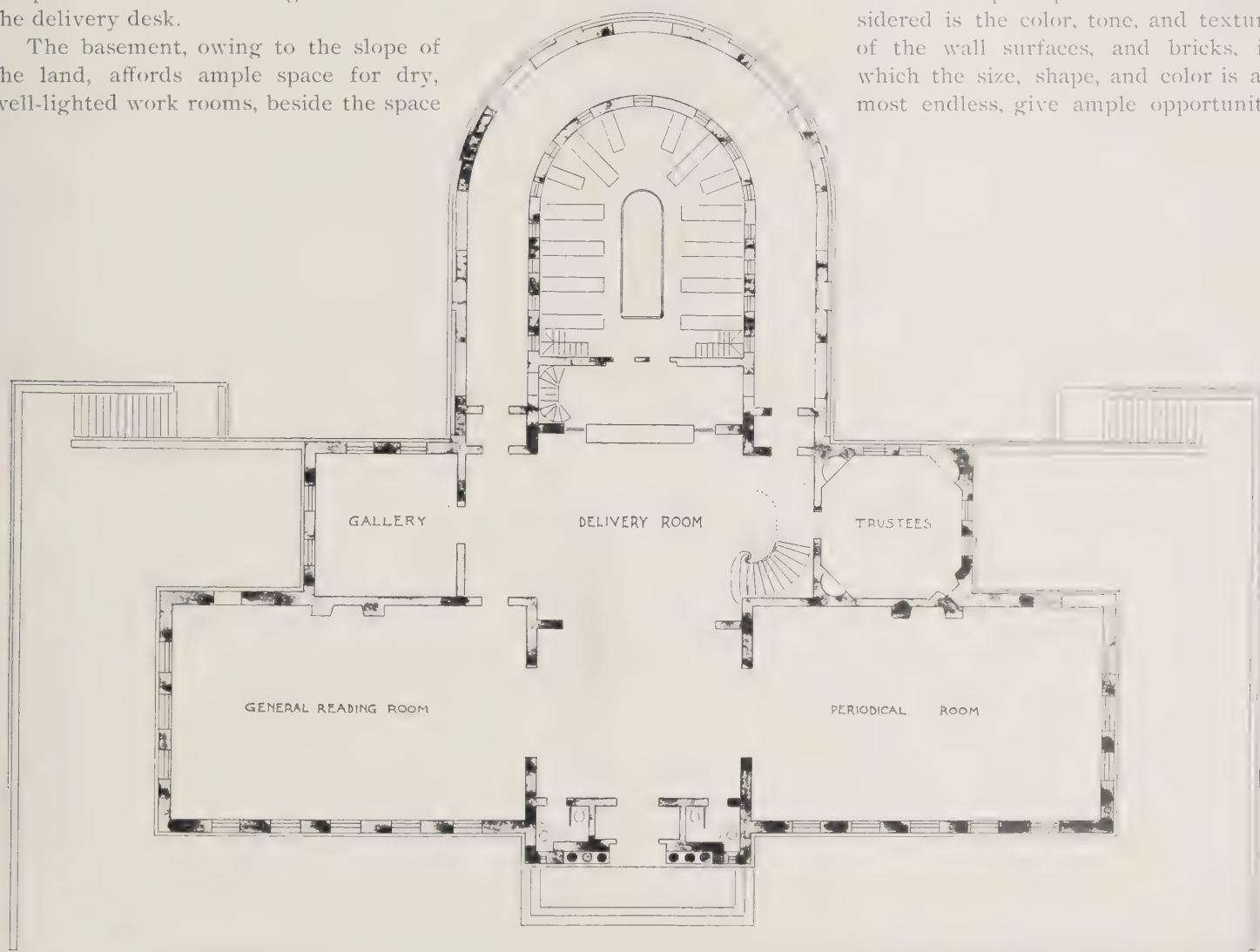
tage should be taken of this opportunity to make a place which may be used as an out-of-door reading room in warm weather.

As partial compensation for the closed stack, there is to be a reading room in the second story, over the covered walk, where students and readers upon special subjects may have access to the books upon the shelves at this level. The librarian's room and the cataloguing room are to be placed upon the second floor, to give greater seclusion, and also to give the needed control of the special reading room. Both these rooms can be easily reached from the first floor by the public staircase, or by the private staircase leading from behind the delivery desk.

The basement, owing to the slope of the land, affords ample space for dry, well-lighted work rooms, beside the space

when some restriction is placed upon the selection, either by a reasonable preference of the client, or through difficulty in getting other than those at hand and belonging to the region. The very limitations of the material itself encourage the endeavor to do the best thing possible with it, and interest grows as its possibilities are discovered and turned to account.

The first and perhaps the only important limitation of burnt clay is in the size of units. Small pieces only can be had. Therefore a due respect for the material, which spurns the surreptitious use of iron, will arch all wall openings and limit projections to suitable dimensions. The principal matter to be considered is the color, tone, and texture of the wall surfaces, and bricks, in which the size, shape, and color is almost endless, give ample opportunity



required for the heating apparatus, storage of fuel, and janitor's room. This slope of the land also gives a high, dry, well-lighted space in the lower part of the stack, which will be sufficient to accommodate the growth of the library for many years to come, without adding to the building.

The wish to have the exterior built entirely of burnt-clay products is reasonable; for the materials are produced in the neighborhood, and many of the townspeople are interested in their manufacture. The ease with which a great variety of materials can be had is often an embarrassment rather than a help to the designer, or it would seem to be so if conclusions may be drawn from the varied assortment often found in one building, and it should be considered rather a blessing than otherwise

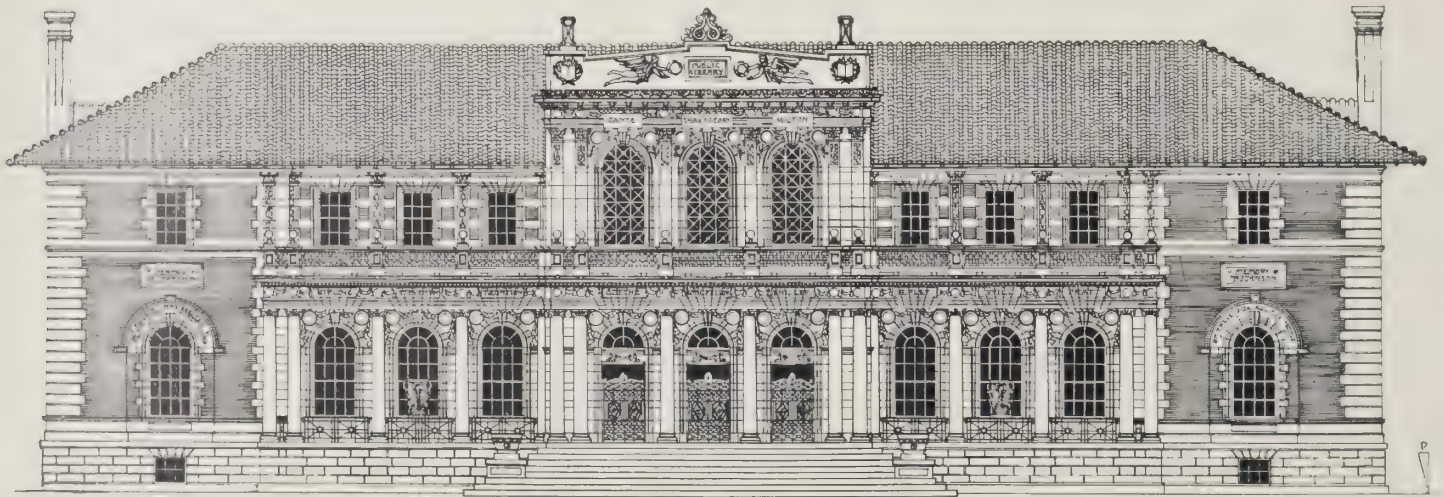
for a selection in harmony with the surroundings. Bricks also lend themselves to arrangements quite sufficient for any accentuations and ornamentation that is desirable. Terra-cotta, emancipated from its cheap masquerade as stone and treated honestly, is a material that one may find pleasure in using in connection with brick where larger pieces or peculiar shapes are needed. The wish of the townspeople can be carried out to the very last detail, for beside the use of tiles for the roofs, tile arches may be used for the vaulting over the covered walk, for its floor, and for the pavement of the terrace. It is not necessary to consider too fully the treatment in detail, as in a preliminary sketch a suggestion merely is aimed at; the ultimate form of the building and its treatment both being matters for more serious consideration.

A Public Library, Cost One Hundred Thousand Dollars.

BY J. F. HARDER.

HERE is a program which appeals to the imagination, at least, being free from hampering conditions. It does not inspire the fear which usually accompanies the suggestion of a competition, and consequently is free from the continual suggestion of the probability of dire defeat. On the contrary, being free from these, an incentive is furnished in the way of re-creation to amuse

picturesqueness is out of the question. Stateliness, however, must not be carried too far, as its chill may become repellent, for of all public buildings a library must wear an air of invitation, grace, and comfortability, — a certain subtle something which makes the visitor feel at home and holds out an inducement for repeated visits. If public libraries are to be productive of any good in the community they must be used by the people to the limit of their capacity. Anything which helps to establish a democracy between books and men is the first function of a public library, small or large. There exist public institutions which are so sacred in their profundity of



FRONT ELEVATION.

SCALE, — INTERCOL = 10 FT.

one's self in a playful way as to what should be done with some one else's \$100,000, value received in the way of a suburban library building. This looks easy, but a little investigation and experience in handling other people's money soon convinces that it is not so easy. One soon prefers to spend his own money foolishly than another's wisely, and arrives at the conclusion that the process of acquiring \$100,000 is perhaps more free from perplexities than to expend it to good purpose. In other words, it causes more hesitation deliberately to assume the responsibility of expending another's money than his own, and the acme of disagreeable things would appear to be to expend a client's money to his satisfaction or, indeed, to the approval of the irrepressible critic.

As the thought of a public library at once presents the idea of formality and dignity, this sentiment must at once be reflected in the arrangement of the building and in its architecture. Regularity and symmetry are therefore fundamental at the beginning. Certainly

architectural effect that one hesitates to profane them by ordinary usage.

In this particular case the building is to be built for the use of the readers of a New England town of twenty-five thousand inhabitants. Therefore, the structure will not be large or particularly monumental, and the quality of comfortableness may even be stretched to the degree of coziness in some parts.

Many matters of arrangement and design are therefore permissible which in a larger and more complex plan could not be entertained. Of course, as time goes on the town will grow, with some exceptions it is a way of New England towns, and with it will grow the demands upon the library. A provision to meet this anticipated increase by three times the capacity demanded in the book-stack room by present needs seems reasonable and provides all that your conservative New Englander cares anything about.

This building being a memorial, it is built for all time. At the same time it is a storage place of volumes

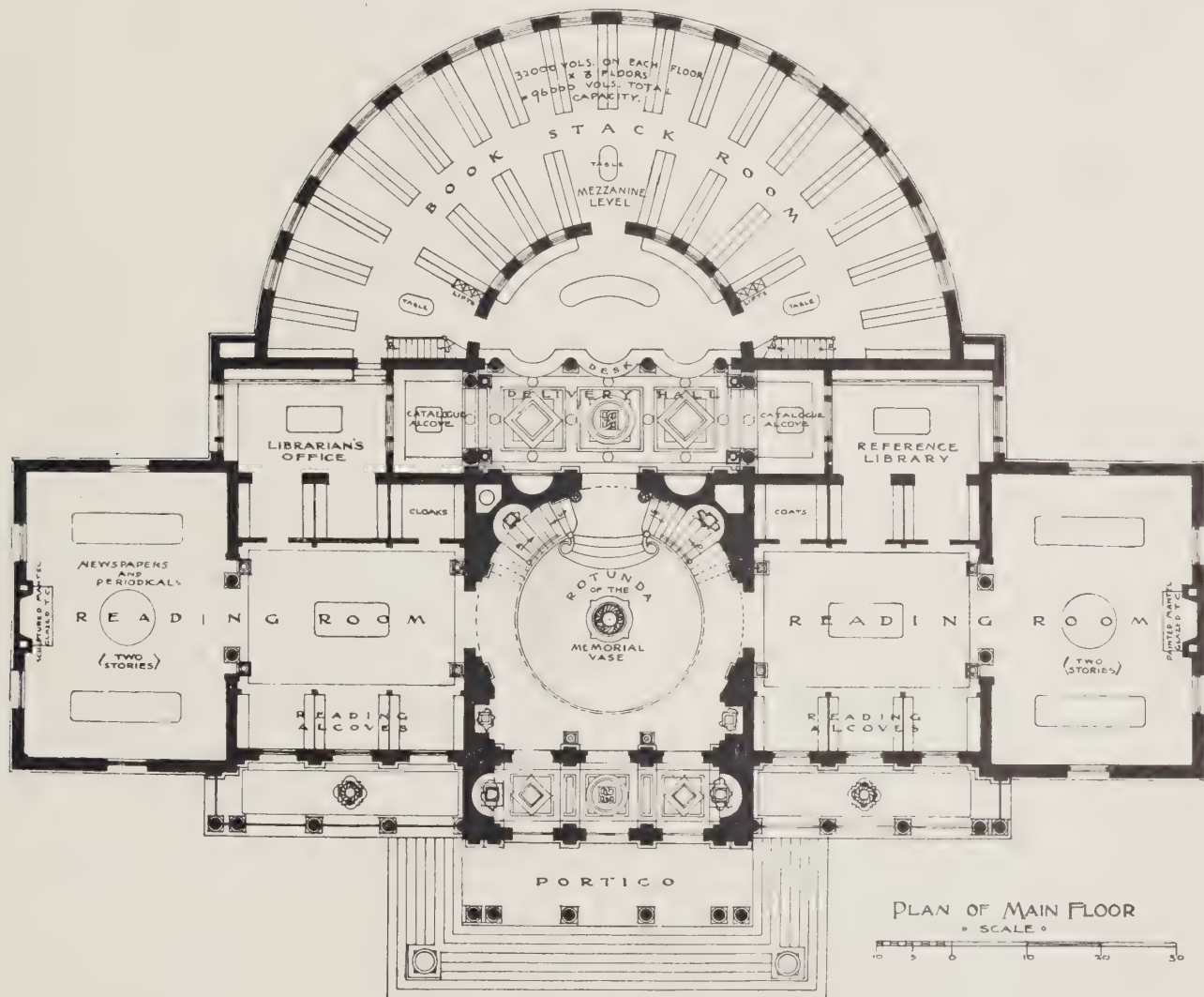


SKETCH OF READING ROOM.

of great value and of works of art. Aside from these two very pertinent reasons, the science, methods, and economy of good fire-proof construction is now so far advanced that the employment of only the simplest and safest methods of fire-proof construction and of incombustible materials, to the exclusion of woodwork to the last degree, not only in the constructive parts but also in the finish and fittings, is a pre-requisite under the circumstances. It is astonishing, too, to what limit thorough non-inflammability may be carried when this object is earnestly pursued in its applicability to any given case. In this field terra-cotta, brick, tile, and the modern products of burnt-clay manufacture play many diversified parts and cover a wide scope. Not only do they possess the highest quality of resistance to fire and heat both from within and with-

bate and the steps are of warm-colored New England granite, fine cut. Above this, the work is entirely of brick and terra-cotta. The brick are of Pompeian red and the terra-cotta is half-glazed and vari-colored. Light gray prevails; blue, green, and yellow appearing in the panels and in the relief ornament. The roof is made of half-round glazed Italian tile, matching with the red of the plain brick walls. The flat surfaces of the terra-cotta are finely corrugated vertically. The gates and railings are of bronze of bright green color.

As we enter the building through the portico we stop in the vestibule a moment for a glance at the busts of two ancient writers of poetry and prose which occupy the niches to the right and left. Continuing to the rotunda, the eye takes in a half-dozen examples of antique pottery,



out, but the perfect plasticity of the material lends itself to the widest range of expression in color and form, satisfying at once in its manifold applicability all the demands of the architect, sculptor, and painter.

The exterior presents a long low building covered with a simple shed roof of medium pitch unbroken by dormers. While the elevation presents something of flatness and monotony in perspective, this is relieved by the animation which the repeated forward projections, in plan, of the central bay and the porticos afford. Around on the back the semicircular book-stack building continues to the height of the second story sill course, and is covered with a simple conical roof. The rusticated stylo-

reminding us that good books and good pottery have endured longest in the affections of mankind and most unchangeably withstood the ravages of time. In the center of the rotunda stands the memorial vase. As the building is a memorial built as a monument to the name and fame of that village hero whose good fortune it was to be able to contribute materially to progress, the object which specifically enshrines his memory here takes the form of a memorial vase. It stands upon a low pedestal and is 7 ft. in height, made of pottery clay glazed and in colors. Upon its surface appears in relief the pictorial presentment of our hero's life, while the record of essential facts and dates is fittingly set forth by lettering.

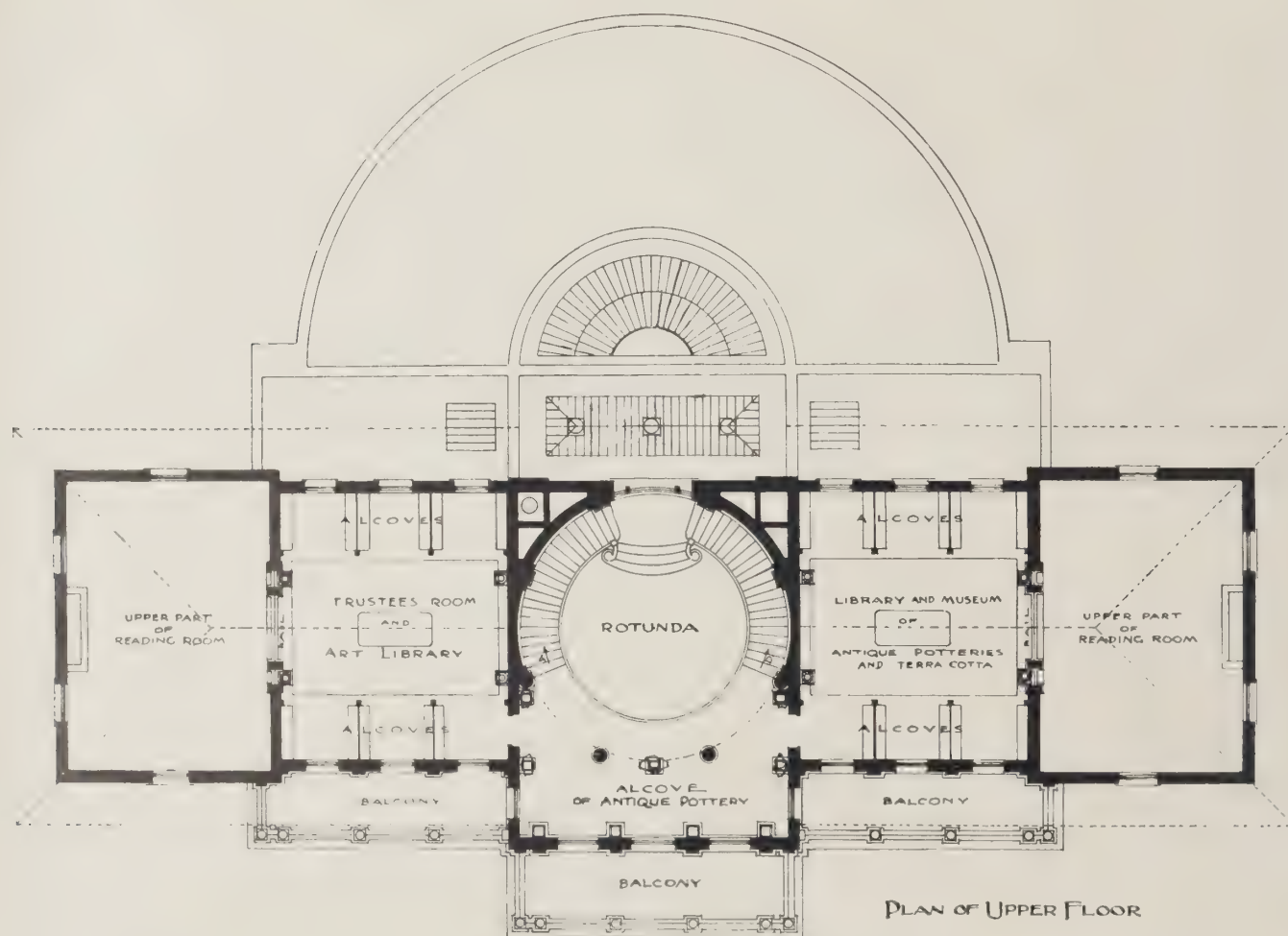
Now comes a slight change of level. Upon an ascent of four steps is the delivery or distribution room. This is a domed hall lighted from above. Beyond it extends the book-stack room in the form of a semicircle. This room is repeated both above and below this level. This circumstance, in connection with the semicircular form of the book-stack building, brings the volumes upon the shelves within maximum accessibility from the delivery desk. Again, the semicircular form appears to present peculiar advantages in reference to economy of floor space, of corridor length, and for sufficient lighting.

The outer wall length affords space for windows of much greater width than can be attained under the con-

ing, the other in relief modeling. The further sections of the reading rooms extend through the whole height of the building to underneath the roof. Their ceilings are barrel vaulted crosswise, so that semicircular lunettes are formed over the mantels and entrances. The intermediate reading rooms give access to the side porticos, which in summer are thrown open to the public in connection with the reading alcoves behind them.

Packing and work rooms, storage room, toilets, etc., are in the basement. In the upper story are further rooms for research and outdoor balconies for summer use.

As the plan is divided into compartments each entirely



ditions of the usual rectilinear stack-room plan. The fronts of the stacks in the radial plan become set at a slight inclination toward the windows which is of immense advantage for reading the stacks.

As the land slopes down towards the rear the lower stack story will be wholly above the ground with a basement beneath.

As one story of the stacks will suffice for present library necessities, the stories above and below the middle level remain in the rough for future finishing and fitting.

Returning to the rotunda, the reading rooms extend to the right and left from it. The view upon the line of the cross-axes terminates not in a window, which would have the effect of throwing everything between it and the eye into silhouette, but in a great illuminated mantel at each end. Both are done in colors, one in under-glaze paint-

surrounded by masonry walls forming floor spans of moderate length, the vaulted Spanish method of floor and roof construction, made with overlapping thin slab tile, will be feasible, economical, and appropriate. In most places this is laid in patterns and forms the finished ceiling at once. In the cases of the barrel vaults of the reading rooms and the domes over the rotunda and delivery hall, however, the joints are left unstruck to form a key for a final finish of tile mosaic.

The finish of floors and wall surfaces, including the architraves and trim around door and window openings, are also made of terra-cotta. The blocks are hollow and closely hand-fitted by cutting and grinding on the site.

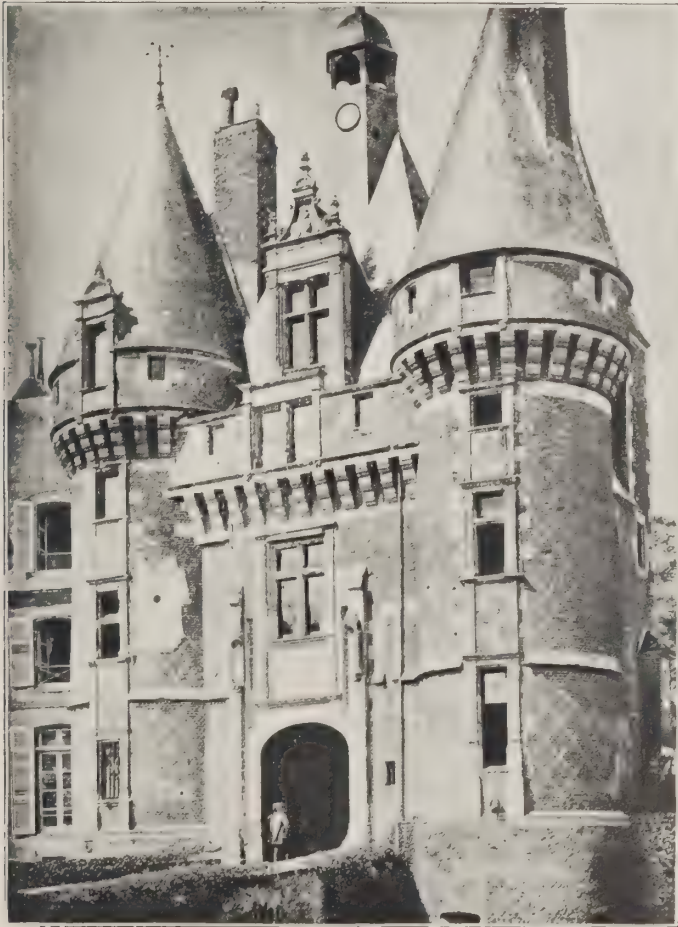
In the case of the exterior walls, the blocks are laid against a coat of water-proofing applied to the inside face of the outer masonry before the inner lining of finishing terra-cotta is set against it.

Minor Brick Chateaux in France.

II. Early Renaissance.

BY WILLIAM T. PARTRIDGE.

DURING the whole of the sixteenth century society in France was in so unsettled a state that the builders of the many small chateaux which are scattered throughout Normandy could not venture to neglect any of the known means of defense. An enclosing wall and moat with drawbridge and entrance lodge and machicolated towers, — all the features, indeed, of the *châteaux forts*, — were included in their design. Several of these entrances of the time of Francis I. are still in good preservation, and through the veil of Renaissance ornament



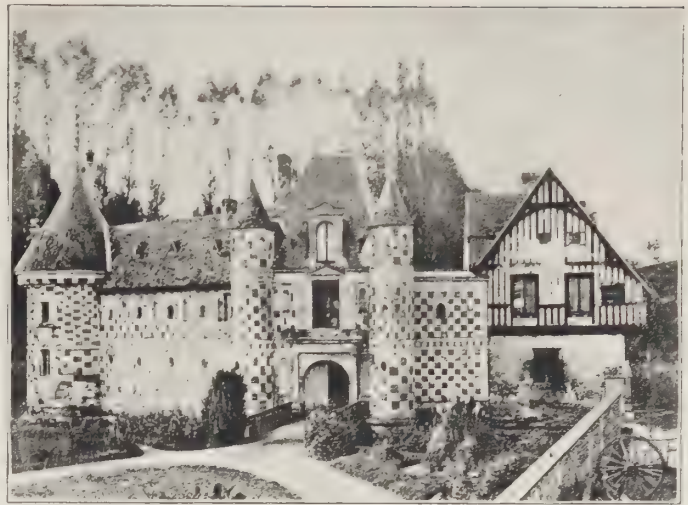
CHATEAU ST. AGIL.

that overspreads them one can easily discern the miniature fortress.

One of the most interesting of these entrances is at *St. Agil*. It is built of brick, but the means of defense are easily discernible. The influence of the Renaissance has altered hardly a feature, the mullioned windows yielding easily to a classic treatment, and the quaint little pilasters added on either side bringing them clearly within the new style.

The brickwork is ornamented with a diaper pattern in a darker brick laid with a thin joint. Yet at Moulins, a Gothic chateau not far from here, the thickness of the joint is nearly equal to the width of the brick. The bond stones are carried deeply into the brickwork.

On closely examining the composition one finds the small door, now blocked up, forces the axis of the main



CHATEAU OF ST. GERMAIN DE LIVET.

doorway off the center of the building, and that this inequality is carried right up through the cornice to the dormer. Though this is easily discovered by counting the corbels in the machicolated cornice, the eye can scarcely detect it.

The little pavilion of the *Ferme Cailletot*, near Bolbec, is less martial in character. It also is of brick and is much the same in mass, but it is decorated by horizontal bands of stone, which continue through the wall of the adjoining building. A small portion of the wall surface is covered with a diaper formed by flints and small blocks of stone set edgewise. The stone dormer is very interesting and is in perfect preservation.

The picturesque chateau of *St. Germain de Livet* is later than these two, but is similar to them in composition. It is built in brick and stone laid like a checker-board. But the long vertical joints which result from



PAVILION OF THE FERME CAILLETOT.



CHATEAU D'AGUESSEAU.

this disposition obviously impair the strength of the wall, and the stones are accordingly made to overlap one another. The contrast in the color of the brick and stone is here so great as to destroy much of the charm of this most attractive group of buildings.

The Manor House, at Bainvilliers, is quite different in character from the preceding examples and is a simple residence with not a trace of the fortress. In composition it is a rectangular mass roofed with a high, steeped roof, broken by dormers which crown the group of windows on the façade. Several string courses are carried through and pilasters mark the position of the internal walls. The façade is not symmetrical. The entrance, a double one, is placed quite to the left, and was originally under a vaulted porch.

The central feature is a large double window terminating in a double dormer under a single gable. Single dormers on either side make a nearly symmetrical composition. The walls are of red brick laid in headers; a diaper pattern is formed

by darker brick. Below the cornice the wall is ornamented with a half diaper pattern, which by its form and position recalls the peculiar pendent tracery under the cornices of Blois and Châteaudun. The chimneys are of molded brick.

The workmanship of this little building is most careful. All the stones bond exactly into the brickwork, and the moldings on the stone string courses are well studied and carefully cut. There is no better precedent for a modern dwelling.

Another building of this same period of the Renaissance is the *hôtel de ville* of Lorris. It is a Renaissance solution not of the château but of the city house, a building between two party walls. The illustration taken from a measured drawing shows a nearly symmetrical façade, with a small central doorway. On either side the windows are massed, a double and a single opening being combined, and are crowned by a dormer on the axis of the double window. The stone string courses return upon themselves without projecting over the party line.



CHATEAU D'AGUESSEAU.

The wall surfaces of this building are decorated by large diaper patterns in a different colored brick.

In the *Château de Boisset-le-Châtel*, near Rouen, built in the sixteenth century, both the design of the brickwork and the general composition are of exceptional interest. In plan it is the typical small château like Martainville, but in its architectural features it goes a step beyond the work of the so-called Francis I. period. A hall runs through the center terminating at the rear in a staircase, which is carried up in a tower. On either side of this hall the rooms are placed with their long axes at right angles to that of the hall. This makes the length of the façade greater than at Martainville. Circular corner towers of small size flank this façade, while on the rear the line of wall is broken by the high staircase tower already mentioned.

The central pavilion on the façade, though apparently preparing for a great central dormer, suddenly terminates in a low pediment. The pediment is jointed with the cornice so neatly that it is difficult to determine whether it is of the same period or not.



CHATEAU OF CRIQUEVILLE.



CHATEAU OF BOISSET-LE-CHATEL.

The central window is assuredly of later date. There is an interesting variation in the second story windows. The difference in width between them and those of the story below is placed on the outside of the group, the width of the pier being thereby kept the same in both stories.

The dormer is on the axis of the central window, small bullseyes coming over the windows of the first and ground floor. Above the dormers is another bullseye, which forms part of the gable of the dormer. Between these the tower of the staircase can be seen in the illustration rising above the roof.

The brickwork is laid in a "herringbone" pattern in the first story and in the upper portion of the tower. In the second story it is laid so as to form a lozenge-shaped pattern. The bricks that make the pattern are light in color, originally white, but now discolored, while the color of the body of the building is a dark reddish-brown.

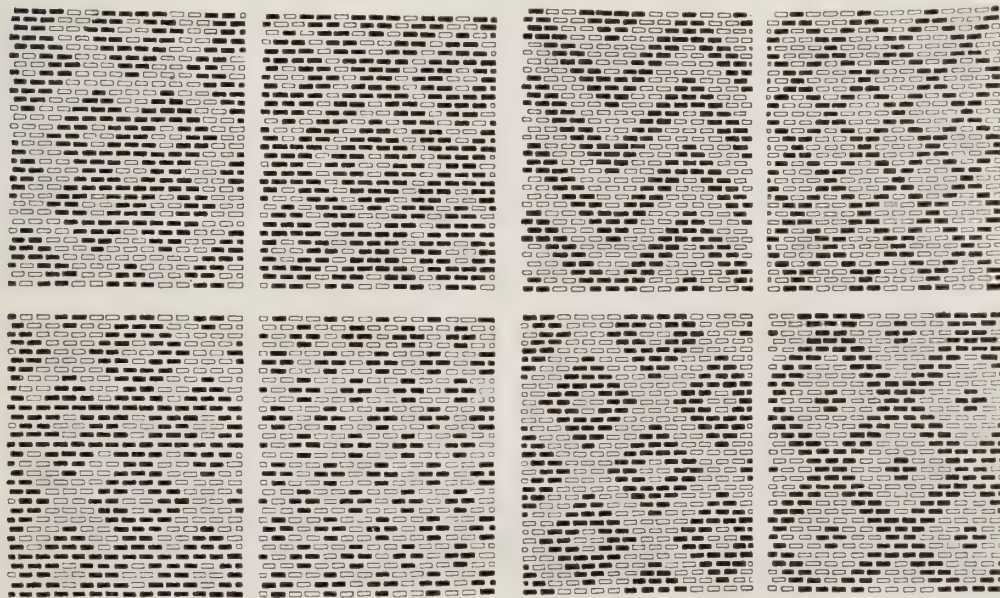
The features in this chateau so much resemble those of the style of Henri II. that were it not for the dormers, one could place it among the later châteaux of that reign. Whether the corner towers become unserviceable or the difficulty of laying a circular wall induced a change is not readily determined. But whatever the cause, the change in the plan of the corner tower from round to square is characteristic of the work of the early Renaissance. The

old traditions are still held strongly both in mass and plan. But the central feature changes, and in one type it is so exaggerated that in order to give it the greater emphasis the main ridge of the roof of the building is divided, separate hipped roofs being formed over each of the adjoining wings. The other variation followed an opposite course, the central feature being almost obliterated and marked only by a low gable or pediment, while the towers on the corners became small square turrets or dropping in height to low flanking wings. These extremes are illustrated in the châteaux of *Criqueville* and *d'Aguesseau*, both in the department of Calvados. *Criqueville*, with the high central staircase, is built in alternate masses of brick and stone, the blocks of stone



MANOR HOUSE AT BAINVILLIERS.

slightly overlapping each other. The bonding of the brickwork is quite irregular. The *Château d'Aguesseau*, near Trouville, is a low, symmetrical little building with a high roof, the eaves of which are brought down quite to the second story, so as to give all the expanse of roof possible. The cornice is broken through by the windows and the small turrets are lowered, thus allowing the same cornice to be carried around them. The cornice being so low makes the dormers rather high. The skill and study shown in the grouping of the windows and in the treatment of the pilasters force one's admiration. There are traces of a lozenge-shaped pattern, but the color has so faded out that it is difficult to trace it, though a few faint lines show it to be correct in scale. This chateau is a delightful composition, whether viewed from the front or from the rear, where the ground falling rapidly away permits another story.



DIAPER PATTERNS FROM MOULINS.

A Village Church, Cost Fifty Thousand Dollars.

BY RALPH ADAMS CRAM.

NO subject offers itself to the architect that has such infinite possibilities as a church. We are only just beginning to find this out here in this land and generation. There was a time in the early days when churches, or rather meeting-houses, as they nearly all were at that time, were quite as good, indeed a great deal better, than the domestic work, and such public work as the poverty of a new country made possible. Later there was a time when churches were quite as bad as, even worse than, the rest of the architecture of which we were guilty. When art began to assume something of its just position as a profession, emerging from its former status as a trade, church building lagged far behind all other branches, and we went through the successive periods of Victorian Gothic, Queen Anne, and Romanesque, unconscious for the time that these episodic styles were showing their weakness more clearly in our ecclesiastical work than in any other. There seemed to be a general idea that any one could build a church, and the results only proved that "any one" tried to.

This condition has passed; some years ago ecclesiastical architecture in England began to acquire a vitality that did not manifest itself elsewhere. With the last Gothic as a basis, the Gothic that had been wiped out together with all other art during the reign of Henry VIII., the architects who understood the meaning and the nature of the rejuvenated Church began to take up the essentially Christian style where its life was brought to an end by untimely and untoward events, and to develop it on sane and sympathetic lines. Beyond all question, church architecture in England to-day is at its best the most



spontaneous and really national architecture that can be found anywhere. Its influence is now making itself felt in America, and little by little architects are beginning to realize that in spite of the French school ecclesiastical architecture is one of the greatest of the fields open to them. For in a church we are at once raised above the limitations of commercialism and the mechanical qualities so salient in contemporary life. We have to express, not some outgrowth, some manifestation of to-day with all its indifference, indeed all its antagonism, to artistic forms; instead, we have a vast and dominant power lasting over, changeless and unchangeable, from those times when art was instinctive and was indeed the very creation of this power. But it is the unchangeable Church existing in a new environment, under different circumstances, and among a new people, therefore both ideas are to be expressed: the idea of the immutable Church and the idea of the new environment.

What is the basis of this work? Not some new and purely secular style like the fashionable Parisian Renaissance, not some archaeological memory sought out of the distant and historic past, not a style created by men of one nationality and one epoch to express their own particular ideas, but rather the style of the Church as it was developed through century after century down to the time when it ceased; and ceased, not because of its own decay, not because of inherent weaknesses, but for the reason that certain events took place which brought it to an untimely end.

And what have we to express through this style, this order of architecture, which it is for us to continue and develop? Surely all that was in the middle ages. An enormous and dominant agency that appeals to every one of the highest instincts in men, and demands for its expression every form of art raised to its highest point. The architect who believes in the Church and understands her is hampered in no respect when he is called into her

service. I say is hampered in no respect; this is not strictly true, for there is one mitigating circumstance that arises now which was little considered five hundred years ago: that is the question of cost. We have not yet reached the point when we can realize that the building of a church demands a certain amount of self sacrifice; when we feel certain that nothing can be too good where the building of a church is concerned, but that everything, even the best, must be in a measure inadequate, and that, therefore, no false economy, no sham, and no cheapness is for an instant permissible.

As we in America gradually emerge from the frontier way of looking at things, — legacy of the truly frontier period of the past, persistent long after the material conditions have disappeared, — we begin to realize that our temporary, "sufficient unto the day" fashion of building is no longer either reasonable or, in the case of churches, reverent. We remember the enduring monuments of the middle ages, and, ambitious not to fall behind, desire to emulate them. The day of the wooden church is gone, but when it comes to a question of building of masonry, the

of round, angular, or otherwise impossible units, and relay it in an unstable wall, dubbing it "picturesque" to gloss its structural shortcomings; we split crude slabs out of sandstone quarries and lay them up as they come, guiltless of chisel, vicious in surface, and unsatisfactory in mass. These things we do because we are unwilling to spend a little more money for the sake of obtaining an homogeneous wall with a fair and self-respecting surface.

Grant for the moment that we really *can't* afford dressed stone and the locality does not furnish flat-faced



only alternative, we are confronted by the matter of cost, for, as I have said above, we have not yet returned altogether to the medieval spirit that thought a church was a matter worthy of some sacrifice. Stone we have in plenty and of great variety, no nation ever boasted more, but to use it as it was used in the past means the expenditure of much money. Yet stone we must have, or think so at any rate, so we compromise and use it in rough and unjustifiable ways. We annex the primitive stone wall

field stones or granite with smooth cleavages: in this case it is much better to use brick, if it is used as it should be. In itself it is a most admirable building material, even for ecclesiastical work, which requires the best of everything. Rich in color, excellent in surface and texture, it is easy to handle, universally available, and comparatively cheap. Of course its durability is unparalleled and it is perfectly honest. Nevertheless, it is not popular for good church work, and for two reasons: first, because

it has been used vilely by the builders of Roman Catholic churches and in this connection is uniformly hideous; second, because all sorts of fancy bricks with fierce colors and shiny surfaces have been poured on the market, and few of these can be used in church work without disaster. They have been used, however, and the bad results have been attributed to the material, not to the variety.

Now, brick of the right kind can be used properly, and when this is done it is a perfectly satisfactory material for church building. By "used properly" I mean laid up in Flemish or English bond with wide joints of gray mortar, broad surfaces, concentrated ornaments, and plenty of stone or terra-cotta of proper color for trimming and optical strengthening, worked well into the brick.

This is the way brick is used in England, and there it is one of the most characteristic features of the new school of restored Gothic. We have just as good brick in this country and we ought to have intelligence to use it equally well. Generally we don't, and the shocking spectacle of a church built of bright red "face" brick with trimmings of white granite is of course enough to disgust the unfamiliar with the material forever.

Nor is brick inconsistent with Gothic; it is precisely as appropriate as stone. Indeed, some of the brick and stone churches of Bodley, Sedding, and others in England are so altogether delightful that one would not have them stone, if this were possible. The richness and variety of color that one can obtain are peculiarly consonant with the Gothic spirit. Of course it would be absurd to design a church for stone and then build of brick: the two materials need different treatment, but as a material brick is

perfectly proper; indeed, the architect who loves Gothic must delight in it and accept it with enthusiasm.

The church under consideration is for an Episcopalian society: assuming that it is to be built in the temperate, not the subtropical, portion of the United States, it must be Gothic in style, for this belongs to the Church by creation, association, genius, history, everything. It is to be a modern church, however, in a modern State; it is for the devotional uses of a power immutable in essentials, though infinitely mobile in its adaptability. For these reasons the Gothic cannot be archæological: it must be mobile and vital, willing to borrow from any source so long as the material can be assimilated. Gothic is less a style than a motive; it is the architecture of imagination, poetry, personality, healthy, all-around living. It is not a system of vaults, arches, and buttresses, but an ideal.

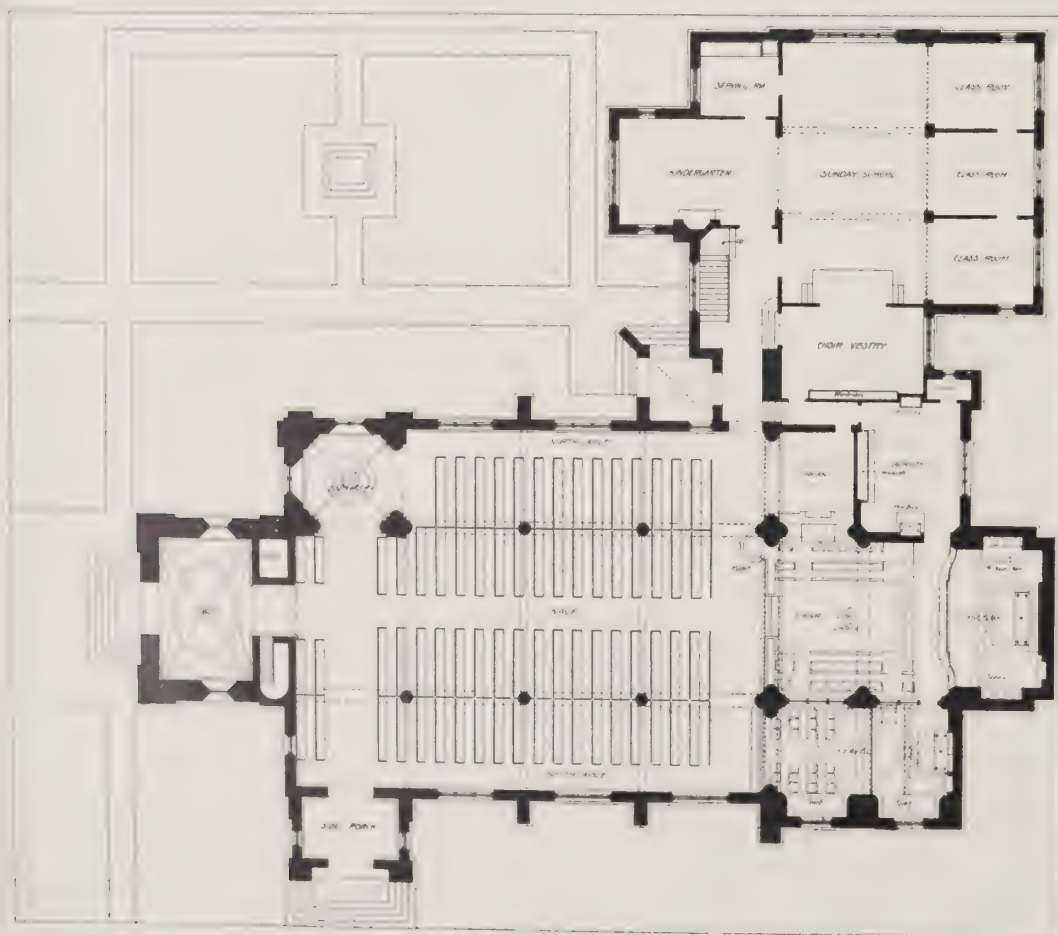
Certain ways of obtaining definite ends must be adhered to simply because they have proved themselves the best, and because they give the optical note of historic continuity. For example, the high, long, narrow nave with aisles separated by piers and arches. This is one of the architectural notes of Catholicity, and not only gives the best effects of light and shadow, mystery and awe, but the best acoustics as well. A church is a preaching place only in its secondary aspect, and therefore no essentially religious quality can be sacrificed to it.

Again, the exterior culminates in a big, lofty tower rising above all its surroundings. This is at the west end, where it belongs, for the church is not large enough for a central tower and transepts.

The plan hardly needs any explanation, for the nature of the material does not affect it in the least. With

the exterior the case is different. Where brick is used it seems to be necessary that the masses should be simpler, the projections less, the surfaces plainer than in the case of stone. Thin, deep buttresses justify themselves in the latter instance, but in the former, broad, shallow piers seem better: this is probably due to the fact that the units of construction are so small that they require space to give them apparent stability and dignity. Stone requires delicacy of treatment and elaboration of parts for its highest effects: brick demands simplicity, bigness, breadth of handling.

For the exterior the materials are good, hard-burned brick, laid up in Flemish bond with quarter inch joints of white mortar; the trimmings are of warm gray terra-cotta. For the interior the materials are





gray terra-cotta, and brick of the same color, irregular in form and rough of surface, if such is to be obtained. Brick could be used for inside work far more often if only the manufacturers would not make it so uniformly clean, smooth, and faultless. A warm gray brick as rough as the common red would be a boon if only it were on the market. The woodwork is of black oak, the floor of gray terra-cotta tiles.

Such a church as this could be built for the sum specified; in stone it would cost half as much again. With good materials and carefully studied design it could be made thoroughly ecclesiastical and permanently durable. Brick of fancy colors would spoil it at once, and the same would be true if the terra-cotta were white, red, or yellow. Gray it must be, and as dull in surface as possible.

There is a great future for brick as an ecclesiastical building material in this country if only its limitations and conditions are recognized. Brick it is and brick it must remain. It is not to be used like stone, but for what it is. In certain ways style is the result of material and must develop from it. As I have said before, Gothic is less a style than an idea, and it is an idea that can express itself in one material as well as in another. The manner only will be different, the motive remains always the same.

Fire-proofing.

MIXTURES OF CLAY AND SAWDUST.

THEIR WEIGHTS AND ULTIMATE RESISTANCES.

TO obtain some accurate data regarding the weights after burning of various mixtures by volume of clay and sawdust, the following specimens were carefully made and burned, which gave some interesting results. The clay used was from the Raritan Hollow and Porous Brick Company, and represented fairly well the average clay used for fire-proofing in that vicinity. No analysis was made, however. Starting with pure clay and water, the following mixtures were made:—

BY VOLUME.		
No. of specimen.	Per cent. sawdust.	Per cent. clay.
0	0	100
1	10	90
2	20	80
3	30	70
4	40	60
5	50	50
6	60	40
7	70	30
8	80	20

Six cylindrical shaped blocks of each mixture were then made by means of a small hand press, and compressed with about 200 lbs. per square inch. The No. 8 mixture had the greatest amount of sawdust that could be held together. After being thoroughly dried in an oven, they were then "burned" in a gas blast furnace, the temperature therein being maintained as near as possible at 2000 degs. F. (about the melting point of copper). Specimens Nos. 0, 1, 2, 3, which were in a slightly hotter part of the furnace, were removed after four hours and fifteen minutes, parts of their surface being slightly vitrified. Specimens 4, 5, 6, 7 were removed fifteen minutes later, and were also near the point of vitrification on the surface. Specimens of No. 8 did not hold together, and were broken when removed from the furnace. It would appear as though the difference in time of burning for different mixtures in blocks of equal size was nil; however, on a large scale conditions are so different that the time of burning may vary. Nevertheless, it would seem that if blocks can be burned on a small scale in four and one-half hours, that kilns that require from ten to forty hours could be improved.

The specimens after burning were carefully weighed, and their respective volumes ascertained by displacement (fine sand being used), from which the following weights per cubic inch were obtained:—

No. of specimen.	Weight per cubic inch [in lbs.].	Weight per cubic foot [in lbs.].
0	.0845	146.01
1	.0808	139.62
2	.0713	123.20
3	.0645	111.45
4	.0596	102.98
5	.0474	81.90
6	.0371	64.10
7	.0244	42.16

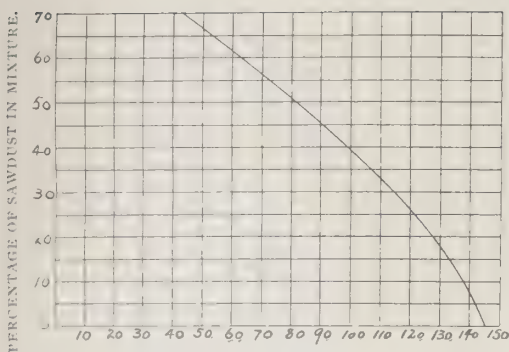


FIG. 1. POUNDS PER CUBIC FOOT OF BURNT MIXTURE.

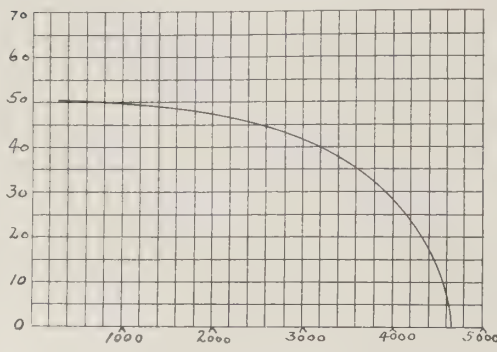


FIG. 2. ULTIMATE RESISTANCE TO COMPRESSION IN POUNDS PER SQUARE INCH.

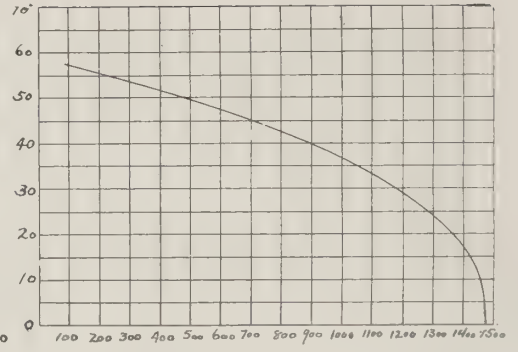


FIG. 3. ULTIMATE RESISTANCE TO SHEARING IN POUNDS PER SQUARE INCH.

Fig. 1 shows graphically the relation between the percentage of sawdust in the mixture and the weight per cubic foot of the material when burned.

The ultimate compressive resistances graphically given in Fig. 2 and the ultimate resistance to shearing in Fig. 3 were obtained from a great number of tests made by I. M. Woolsen, E. M., of Columbia University.

PRACTICAL RULE FOR OBTAINING MAXIMUM SPANS FOR HOLLOW TILE FLAT ARCHES.

THE following is an extract from the "Laws Relating to Buildings in the City of New York," and, as will be readily understood, defines the maximum span of any depth terra-cotta arch in terms of its depth, and only its depth. The cross-sectional area, the density of the material, the type arch, vibration, setting, etc., which are of vital importance, do not figure in the law or rule.

"All brick or stone arches placed between iron or steel floor beams shall be at least 4 ins. thick and have a rise of at least $1\frac{1}{4}$ ins. to each foot of span between the beams. Arches of over 5 ft. span shall be properly increased in thickness, as required by the Superintendent of Buildings.

"Or the space between the beams may be filled in with sectional hollow brick of hard-burnt clay, porous terra-cotta, or some equally good fire-proof material, having a depth of not less than $1\frac{1}{4}$ ins. to each foot of span (changed now to $1\frac{3}{4}$ ins.), a variable distance being allowed of not over 6 ins. in the span between the beams."

Let us consider a 6 in. end-construction flat arch of as small a cross-sectional area as is practical to make, viz., 22 sq. ins.; it is just a shell without any webs. Apply the law and we get a maximum span of 5 ft. $3\frac{1}{2}$ ins. Now if the arch is constructed of heavy blocks, say 62 sq. ins. per foot of arch, — this is about as heavy as can be made, — we have the same span as before, 5 ft. $3\frac{1}{2}$ ins. It would certainly appear as though the rule was not applicable. The following empirical formula, which takes into account the various factors entering into the case as mentioned above, gives good practical results.

$$C \sqrt{A \times D} = S$$

In which A = Cross-sectional area of an arch
1 ft. wide (in square inches).

D = Total depth of arch (in inches).

C = Constant.

S = Span (in feet).

The constant, C, is an assumed quantity and depends in a general way upon the material used, whether end or side construction, percentage of the efficient bonding material, vibration, and bending when the spans become comparatively long. It will be seen in the following appended table that the values of C are small for the smaller arches, rising gradually to the 12 in. arch and again decreasing. This is due to two of the above-stated reasons: First, the percentage of efficient bonding in the shallow arches is comparatively small, and, secondly, the susceptibility to bending and vibration in the deep arches is great: two very practical and good reasons for changing the constant as has been done. In the table, values are given for the maximum and minimum sections that are practical. The cube root of any number is readily found in any of the rolling-mill hand-books, and solving the formula for any section desired is then a simple matter.

VALUES FOR C, S, AND A.

END-CONSTRUCTION FLAT ARCHES MADE OF SEMI-POROUS TERRA-COTTA.

Depth of arch in ins.	C	Minimum section.		Average section at present used.		Maximum section.	
		A sq. ins.	S feet.	A sq. ins.	S feet.	A sq. ins.	S feet.
4	.6227	18	2.58	28	3.00	44	3.47
5	.7370	20	3.41	32	4.00	53	4.73
6	.8337	22	4.24	36	5.00	62	5.99
7	.8793	24	4.84	40	5.75	71	6.95
8	.9206	26	5.45	44	6.50	80	7.93
9	.9592	28	6.05	48	7.25	89	8.90
10	.9744	30	6.52	52	7.83	98	9.76
11	.9992	32	7.05	56	8.50	107	10.54
12	1.0045	34	7.44	60	9.00	116	11.21
13	.9921	36	7.69	64	9.33	125	11.66
14	.9822	38	7.95	68	9.66	134	12.12
15	.9748	40	8.22	72	10.00	143	12.56
16	.9609	42	8.41	76	10.25	152	12.91

The British Fire Prevention Committee, of London, whose main object is to direct attention to the urgent need for increased protection of life and property from fire by the adoption of *preventive* measures, has recently conducted the following tests: Official fire tests with partitions, official fire tests with ceilings, official fire tests with glass, experimental plain glass tests, experimental fire tests with floors, experimental fire tests with doors, official fire tests with treated wood. The results of these tests are printed in pamphlet form for distribution.

Selected Miscellany.

NOTES FROM NEW YORK.

Mr. Chas. A. Rich has planned a six-story bachelor apartment for Mr. W. H. Stearns, to cost \$200,000.

Mr. Wm. Waldorf Astor, of England, will erect an eight-story store and loft building on Broadway, corner of 13th Street, from plans by Clinton & Russell, cost \$400,000.

It is odd that so many of our architects have discovered during the past year that "single blessedness" is more conducive to success, or at least to personal sat-

The trustees of a large church in Brooklyn have decided to spend \$125,000 upon a new building. A daily paper announced that the committee spent last evening examining plans, seven sets having been sent in. They also announce that they will be very glad to receive further plans for the next three weeks. Would any carpenter or mason submit bids under these conditions? What are we coming to? We New Yorkers have read with interest the "Rules for Practice" laid down by the Boston Architectural Club, so of course Boston is free from the troubles which trouble us. We hope so.

During the past week plans have been filed for one hundred and seventy-two buildings, to be erected in Manhattan and Bronx Boroughs alone, the total cost of which



isfaction. Among the firms which have recently dissolved partnership are Lamb & Rich, Brunner & Tryon, Berg & Clark, and Melendy & Detwiller.

I have it on the authority of many of our contractors and manufacturers that the present high prices in build-



CRAIG COLONY FOR EPILEPTICS.
Carrere & Hastings, Architects.

exceeds \$4,000,000. This, it is needless to say, is an unusually large amount of business to be filed during so short a space of time. A great majority of these buildings are tenements, and the rush to file plans is explained by the fact that during this month the new code goes

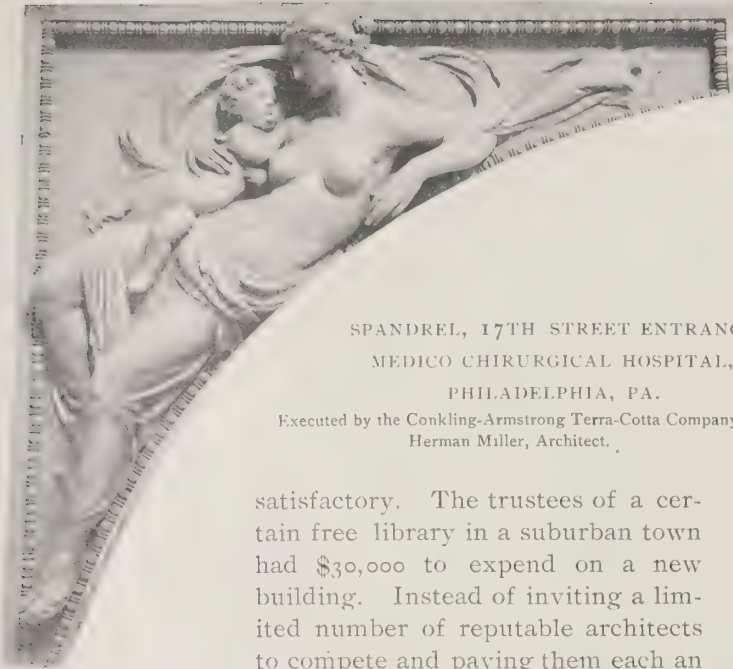


ing materials cannot last. There are hundreds of operations which have been laid aside, and which will stay there, until prices are more favorable. The year 1900 is bound to be a good one if manufacturers and producers will only realize this.

A bill is to be presented to Congress during its present session providing for a new up-town post-office, which is badly needed. The site most favored is in the neighborhood of the Grand Central Station. The population of New York, taking the city in its largest sense, is now grouped about this point. Here is to be the great hotel and apartment-house district, and here will be gathered, more and more, the various kinds of businesses that make the largest use of the mails.

into effect, which is not nearly so favorable to tenement building as the present building law. Of course all the buildings for which plans have been filed will not be built at once and many not at all.

On behalf of at least some of the architects of New York THE BRICKBUILDER is requested to register one vigorous kick to head the list for the new century. Probably nothing is hurting the profession so much now as the "open competition," which has become a nuisance, and in fact an octopus gathering in the best of our architects who are unable to resist its glittering eye and suave manner. Of the many which have come to my notice recently, I would like to call attention particularly to two which, as in nine cases out of ten, are bound to be un-



SPANDREL, 17TH STREET ENTRANCE,
MEDICO CHIRURGICAL HOSPITAL,
PHILADELPHIA, PA.

Executed by the Conkling-Armstrong Terra-Cotta Company.
Herman Miller, Architect.

satisfactory. The trustees of a certain free library in a suburban town had \$30,000 to expend on a new building. Instead of inviting a limited number of reputable architects to compete and paying them each an adequate fee for their trouble, they instituted an "open competition" into which thirty architects were lured. Imagine it! Thirty architects devoting two weeks of hard work for the privilege of drawing a ticket in this lottery! The bait thrown out was as follows: First prize, \$300; second prize, \$200; third and fourth prizes, \$100 each. Well, after two months' hard (?) work the building committee decided that not one of the designs was fit to build, but they generously distributed the prizes to those whose designs caught their eye. Now, is the "game worth the candle," and is the dignity of the profession advanced by such methods? Would any lawyer give two weeks of his time and best efforts just to have a committee pass on his ability?

NOTES FROM CHICAGO.

The Chicago National Bank competition is closed, but the award has not yet been made public.

Louis H. Sullivan, D. H. Burnham, and Peter B. Wight have been chosen to represent the architects on the executive board of the Municipal Art League.

A large hotel in the lodging-house district, on the plan of the Mills Hotels in New York, is being talked of as a possibility in the near future. Something of the sort is certainly much needed in Chicago.

Local architects are not at all pleased at the intimations recently given that the five new government buildings soon to be erected in Illinois are to be designed in the office of the supervising architect at Washington. The buildings referred to are to be located at Joliet, Elgin, Streator, Freeport, and Monmouth.

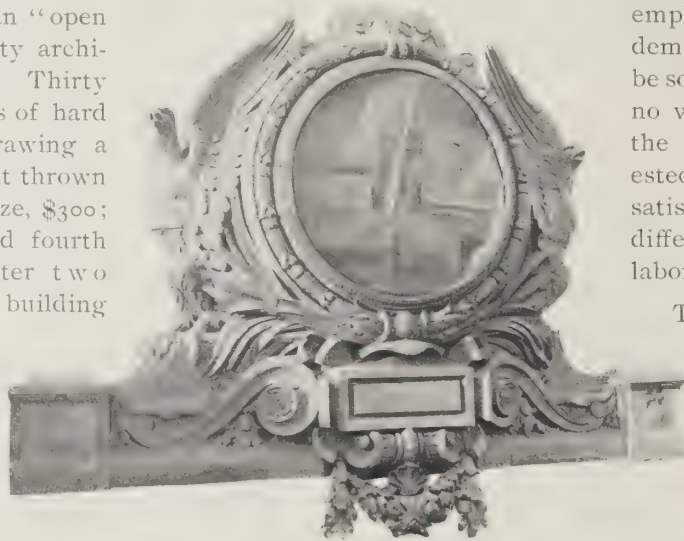
Building Commissioner McAndrews has turned over to the city law department the names of five hundred owners of buildings who have not complied with Section 198 of the building code, requiring swinging or revolving sash above the second story, except where safe balconies are provided. Final notices have also been sent to many violators of this excellent ordinance for the safety of window washers.

Charles A. Coolidge, S. S. Beman, and W. Carbys Zimmerman constitute the jury of award in the medal competition instituted by the Illinois Chapter, A. I. A., for the benefit of the Architectural Club. The problem this year is a "Municipal Court" extending along the lake front on Michigan Avenue, from Jackson Boulevard to Randolph Street, and involves the designing of a city hall, a building for the board of education, and a proposed extension to the Art Institute.

The usual holiday dulness in new building operations is greatly increased by the continued uncertainty as to the outcome of the pending negotiations between the arbitration committees representing the employers and the trades unions. The demands of the unions have grown to be so unreasonable and tyrannical that no very great hopes are cherished by the unrepresented but much interested building public for an early and satisfactory adjustment of existing differences between employers and labor.

The *Construction News* gives the following account of an interesting case which was tried here recently before Justice Underwood:—

"Henry G. Wright, a member of the Chicago Architects' Business Association, brought suit against Nicolay Hasselo, an owner, and Charles J. Cross, a contractor, for architect's fees for plans for a house, which had been erected in Rogers Park from copies of Mr. Wright's plans



ILLUMINATING DIAL, EDISON ELECTRIC BUILDING, CHICAGO.
Executed by the American Terra-Cotta and Ceramic Company.
Shepley, Rutan & Coolidge, Architects.



PILASTER CAP, HOTEL FOR WHITE ESTATE, 38TH STREET,
NEW YORK CITY.
Executed by the Atlantic Terra-Cotta Company.
Barney & Chapman, Architects.



HALL.



LIBRARY.

HOUSE AT EAST MILTON, MASS.
McKim, Mead & White, Architects.



PANEL AT SIXTH STORY, HAMILTON BUILDING, AKRON, OHIO.
Made by Northwestern Terra-Cotta Company.
Mead & Garfield, Architects.

for another dwelling in the same vicinity, for a man named Ryan. The architect had communicated with Hasselo, as he had heard that the latter contemplated building, and admired the Ryan house.

"Mr. Hasselo did not give Mr. Wright the commission, but ultimately erected a house which was an exact duplicate of the Ryan residence. The plans of the Hasselo house were presented in court and bore the signature of the architect, R. B. Powell. A tracing of the plans of the Ryan house was laid over the plans of the Hasselo house, and they were found to coincide exactly. Changes had been made in the size of windows and the height of first story of the Ryan house after the plans had been drawn, and the figures only were changed on the plans. These changes of figures were reproduced on the plans of the Hasselo house, leaving the drawings out of scale and showing plainly that the plans had been copied. Justice



CARTOUCHE ORNAMENT OVER WINDOWS, APARTMENT HOUSE, WEST END AVENUE, NEW YORK CITY.
Executed in gray terra-cotta by Excelsior Terra-Cotta Company.
Thorn & Wilson, Architects.

Underwood gave the complainant judgment for \$157.50, being equal to a commission of $3\frac{1}{2}$ per cent. on the cost of the dwelling."

IN GENERAL.

The Washington Architectural Club, now numbering somewhat over seventy members, has been admitted to the League.

Mr. A. L. Brockway's paper, "The Influence of the French School of Design upon Architecture," was the most fully discussed paper read at the recent convention of the American Institute of Architects.

On December 4 a dinner of fifty covers was given in the assembly room of the T Square Club to the visiting



DETAIL, SULLIVAN BUILDING, ST. LOUIS, MO.
Made by Winkler Terra-Cotta Company.
Isaac S. Taylor, Architect.

members of the exhibition committee. Tables were arranged in the form of a large T square, from the head of which Adin B. Lacey, president of the club, presided.

Work upon the circuit of exhibitions to be held in Philadelphia, New York, Chicago, St. Louis, Detroit, Cleveland, and Pittsburgh was reported well advanced. Beside an unusual quota of entries from the United States, over one hundred have been received from England, a large number from Paris, and a few from Canada.

The largest area occupied by a single private mansion in New York will be the residence of Andrew Carnegie, which will occupy the entire Fifth Avenue front between 90th and 91st Streets. From the designs prepared by Babb, Cook & Willard, we have every reason to anticipate a stately establishment equalling any in Paris or London.

At a recent executive board meeting of the Architectural League of America, held in Pittsburgh, a national

committee upon municipal improvement and civic embellishment was appointed. It is composed of nine men from eight different cities, who have made this subject a special study, all of whom are willing and anxious to be consulted by any who may desire to get up municipal art societies.

We learn from Detroit that the local architectural club has taken the initiative in organizing the Detroit Art Federation. The societies that responded to President Ropes's call are the Michigan Chapter of the American Institute of Architects, the Water Color Society, the Art Association, and the Ceramic Club. It is to be hoped that many more such alliances will be formed throughout the country.

NEW CATALOGUES AND CALENDARS.

"THE STORY OF THE HOUSE. Being some suggestions in brickwork from the catalogue of O. W. Ketcham, whose office is in the Builders' Exchange, of the city of Philadelphia, in the State of Pennsylvania. Illustrated and arranged by Henry Loomis Curtis."

"The Story of the House" is a title given to an extremely interesting catalogue of various forms of brick and terra-cotta. Advertising has surely become one of the fine arts, and this volume takes rank among the best of its kind. The first half is occupied by a number of clever sketches illustrating quotations from the poets, having special reference to such portions of buildings as are capable of being constructed of brick. In the conception of these sketches Mr. Curtis has created some particularly pleasing designs that harmonize very effectively with the poetic character of this portion of the book. The catalogue is divided into three parts: part one as described above; part two devoted to molded brick forms, of which drawings are given of a hundred or more patterns; part three, which treats of terra-cotta fire-proof materials. In this last there are illustrations of the various arches com-

monly employed in burned-clay fire-proof construction, also of partition blocks, girder coverings, furring tiles, etc. The binding of this work is in the style of the last

century, being of a buff parchment color, with the title "The Story of the House" set in a design representing a rough hand board, such as might have been used for bulletin purposes in the days of the Pilgrim fathers. As we have stated above, this work is a radical departure from the general form of trade catalogues. We feel that the architectural profession will be much interested in its contents, and welcome its originality. The only disappointment about the book is that there is not a great deal more of it.

We are in receipt of the advanced sheets of a catalogue shortly to be issued by the Tiffany Enameled Brick Company, descriptive of the shapes, shades, etc., of the enameled brick which they manufacture. This booklet is published in a convenient pocket size, and is of attractive appearance. In the arrangement of contents care has been taken to make all matter brief and concise, and yet to include all essential information possible to give in a catalogue concerning the use and purpose of this product as a building material. Following the introductory pages are tables of the dimensions of their various brick, and diagrams are shown of cross-sections of the principal shapes, with a schedule of approximate costs of same. Explanatory notes of considerable interest accompany these tables. We are glad to recommend this booklet as a work of reference very desirable to architects and others interested in the use of enameled brick. Parties desiring copies should communicate with the Tiffany Enameled Brick Company, Marquette Building, Chicago, Ill.

The Winkle Terra-Cotta Company, St. Louis, Mo., have issued a most attractive calendar for 1900. The subject of the illustration, "The Goddess of Plenty," is evidently taken from a photograph of a terra-cotta panel made by this company. The exquisite grace and beauty of the model-



PILASTER CAPITAL, POSNER BUILDING, BALTIMORE, MD.

Work executed by the New York Architectural Terra-Cotta Company.

Charles E. Cassell, Architect.



DETAIL, RITTENHOUSE APARTMENTS, PHILADELPHIA, PA.

Made by Perth Amboy Terra-Cotta Company.
Willis G. Hale, Architect.

ing and the artistic conception of the design are well worth more than a passing mention.

James A. Davis & Co., Boston, Mass., distributors of high-grade American Portland cements, have issued a unique and pleasing calendar, the subject illustrated being "Tiny Tim," a high-bred Boston terrier, owned by Mr. Davis.

CURRENT ITEMS OF INTEREST.

The Celadon Terra-Cotta Company, Ltd., are furnishing the roofing tile for the following buildings: Library at Wayland, Mass., Cabot, Everett & Mead, architects; summer house, Thompson, Conn., for Norman B. Ream, Shepley, Rutan & Coolidge, architects; residence for A. C. Hindekoper, Meadville, Pa., Alfred H. Thorp, architect; residence, San Francisco, Cal., for N. Clark & Sons.

Edward R. Diggs & Co., Baltimore, Md., are furnishing the brick for the following buildings: The new library building, Baltimore, Md., Joseph Evans Sperry, architect; the Emerson Building, Baltimore, Md., William McLane Goodrich, architect; the Guardian Trust Company's Building, Baltimore, Md., Baldwin & Pennington, architects. This last operation will require over 120,000 impervious light front brick.

The Atwood Faience Company, Hartford, Conn., has recently been reorganized with a liberal working capital, and the plant is now running under new management. The company announce that they are in position to fill all orders promptly, and will be glad to render estimates on any work in their line. They are also introducing in the market several new and beautiful effects in dull finished tile.

The next convention of the National Brick Manufacturers' Association will be held at Detroit, Mich., February 5 to 10, and we earnestly recommend those

among our readers who are manufacturers' agents in burned-clay products to make an effort to be present. We particularly designate agents, because, as a rule, this important faction of the clay material business does not attend these conventions, and we believe that it would be to their advantage as well as to that of the industry as a whole if, in these assemblies, the market end of the clay business was more fully represented by their presence.

The important part played both in the appearance

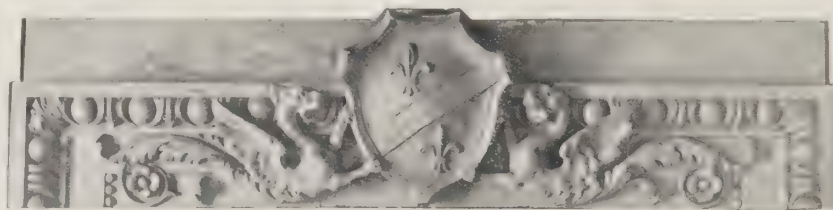
and durability of a building by architectural terra-cotta is now firmly established. The year just closed has witnessed the success which can be obtained in this line where the article manufactured is of a high standard of

quality. We refer to the Atlantic Terra-Cotta Company, of 287 Fourth Avenue, New York City. This company has been operating for hardly more than a year, but by the character of its work has now an established position in all the principal cities of the East.

Its success, naturally, was to have been expected, as, in its organization, the principal departments were placed in charge of experienced men, who had risen to high positions in the larger companies. Among the principal contracts made by the company are the following: Terminal Hotel, Boston, Mass., Arthur Bowditch, architect, George A. Fuller Company, contractors; Albany Building, Albany, Beach, and Lincoln Streets, Boston, Mass., Peabody & Stearns, architects, Norcross Bros., contractors; apartment house, 12th and Spruce Streets, Philadelphia, Pa., Yarnell & Goforth, architects, Dorsey & Smith, contractors; police and fire house, Carpenter and 7th Streets, Philadelphia, Pa., Hazelhurst & Huckle, architects, J. E. & A. L. Pennock, contractors; valve house, Allegheny Avenue, Philadelphia, Pa., Wilson Brothers & Company, architects, J. E. & A. L. Pennock, contractors; residence, Rhode Island Avenue, "N" Street and Scott Circle, Washington, D. C., Heins & La Farge, architects, George H. Turton & Co., contractors; passenger station, Pittsburgh & Lake Erie Railroad, Pittsburgh, Pa., J. A. At-

wood, chief engineer, Henry Shenk, contractor; residences, Fifth Avenue, New York City, for W. W. Astor, Clinton & Russell, architects, John Downey, contractor; White Estate Hotel, 38th Street and Seventh Avenue, New York City, Barney & Chapman, architects, Thompson & Adams, contractors; apartments, Central

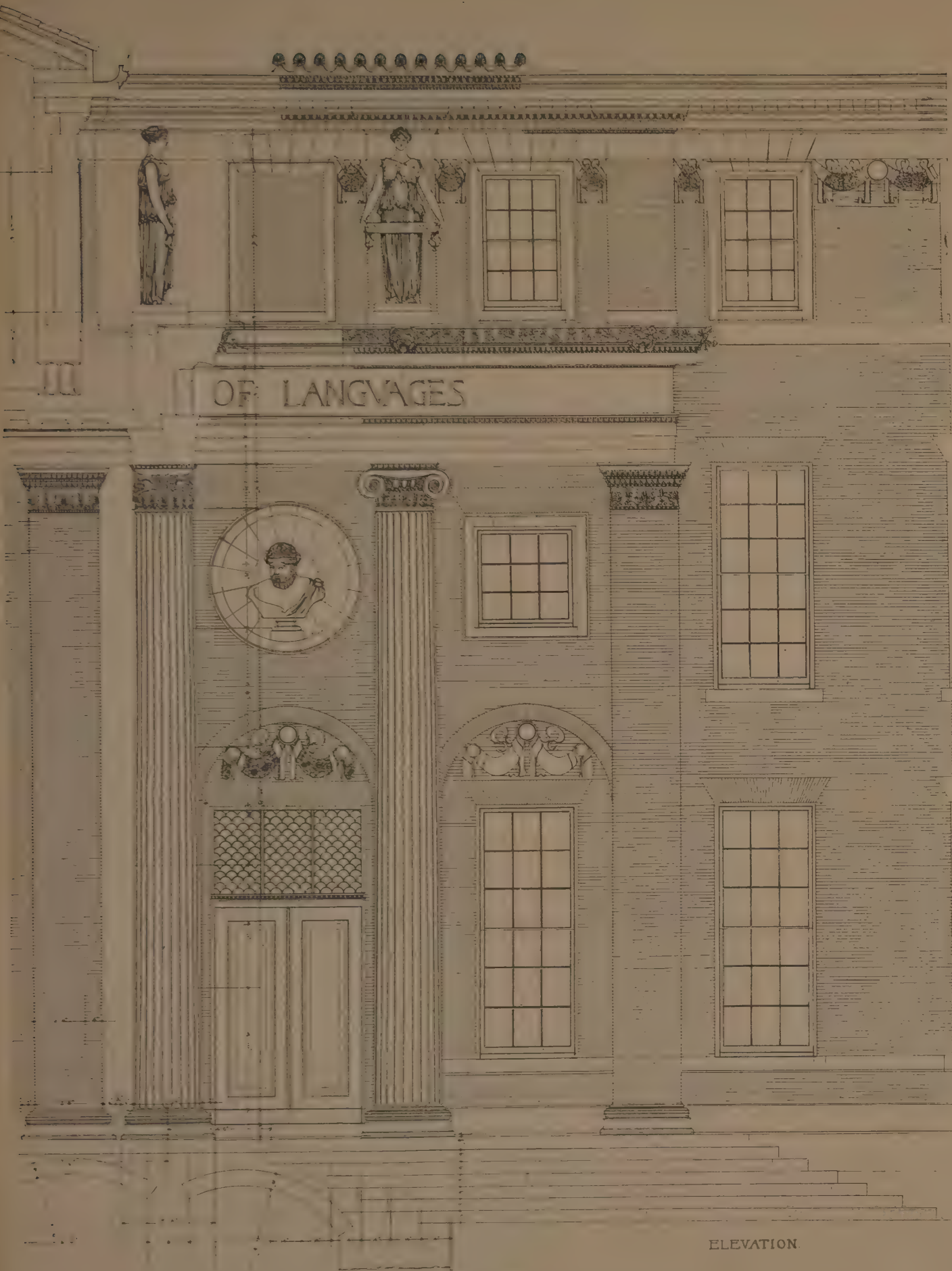
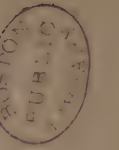
Park West and 92d Street, New York City, George Keister, architect, Patrick Norton, contractor; International Bank Building, Broadway and Cedar Street, New York City, Bruce Price, architect, George A. Fuller Company, contractors. The company doubled the capacity of its plant during the last six months, and the kiln which it has just completed is the largest one in the East. It is a pleasure to record the success which this company has met with and which it has justly merited.



ARCHITRAVE CROWN, APARTMENT HOUSE, NEW YORK CITY.
Executed by the New Jersey Terra-Cotta Company.
George F. Pelham, Architect.

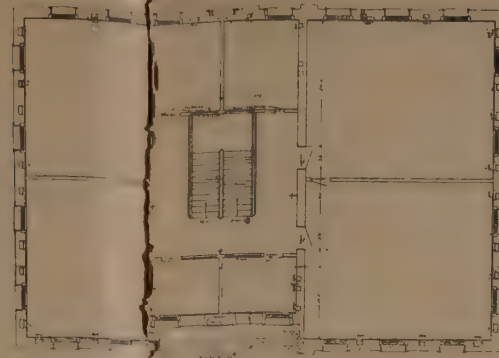


HOUSE AT OVERBROOK, PA.
David Knickerbocker Boyd, Lawrence Visscher Boyd, Associated Architects.

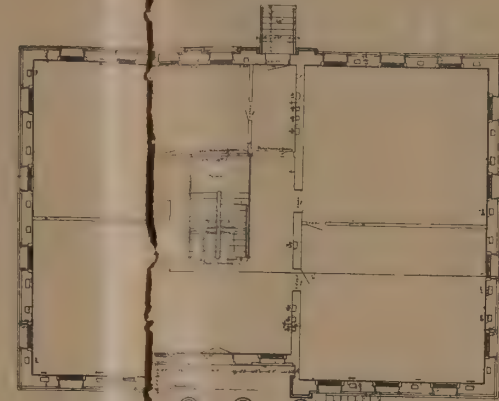


ELEVATION.

DETAIL, FRONT ELEVATION.
HALL OF LANGVAGES, UNIVERSITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY.
MCKIM, MEAD & WHITE, ARCHITECTS.



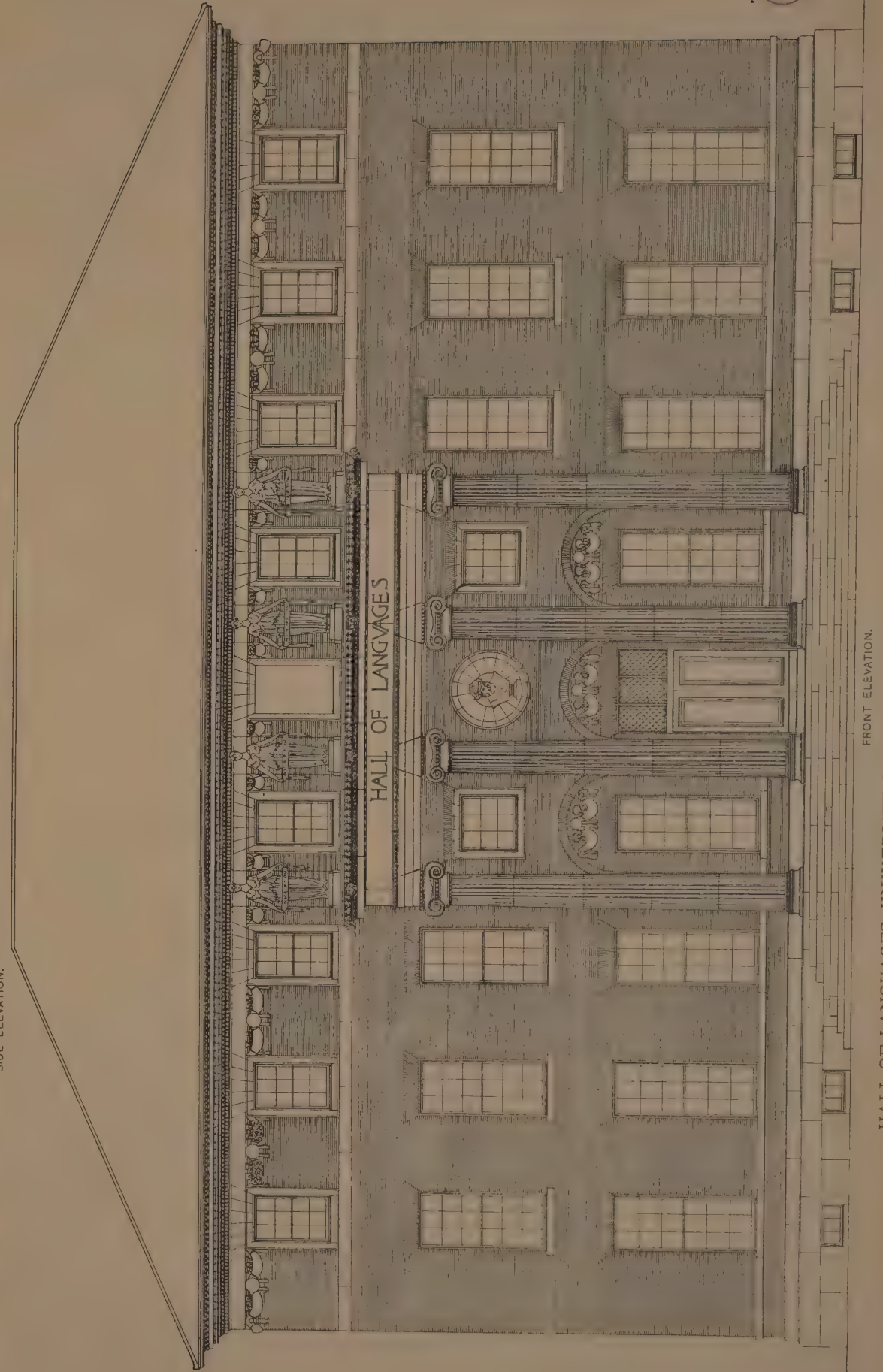
GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

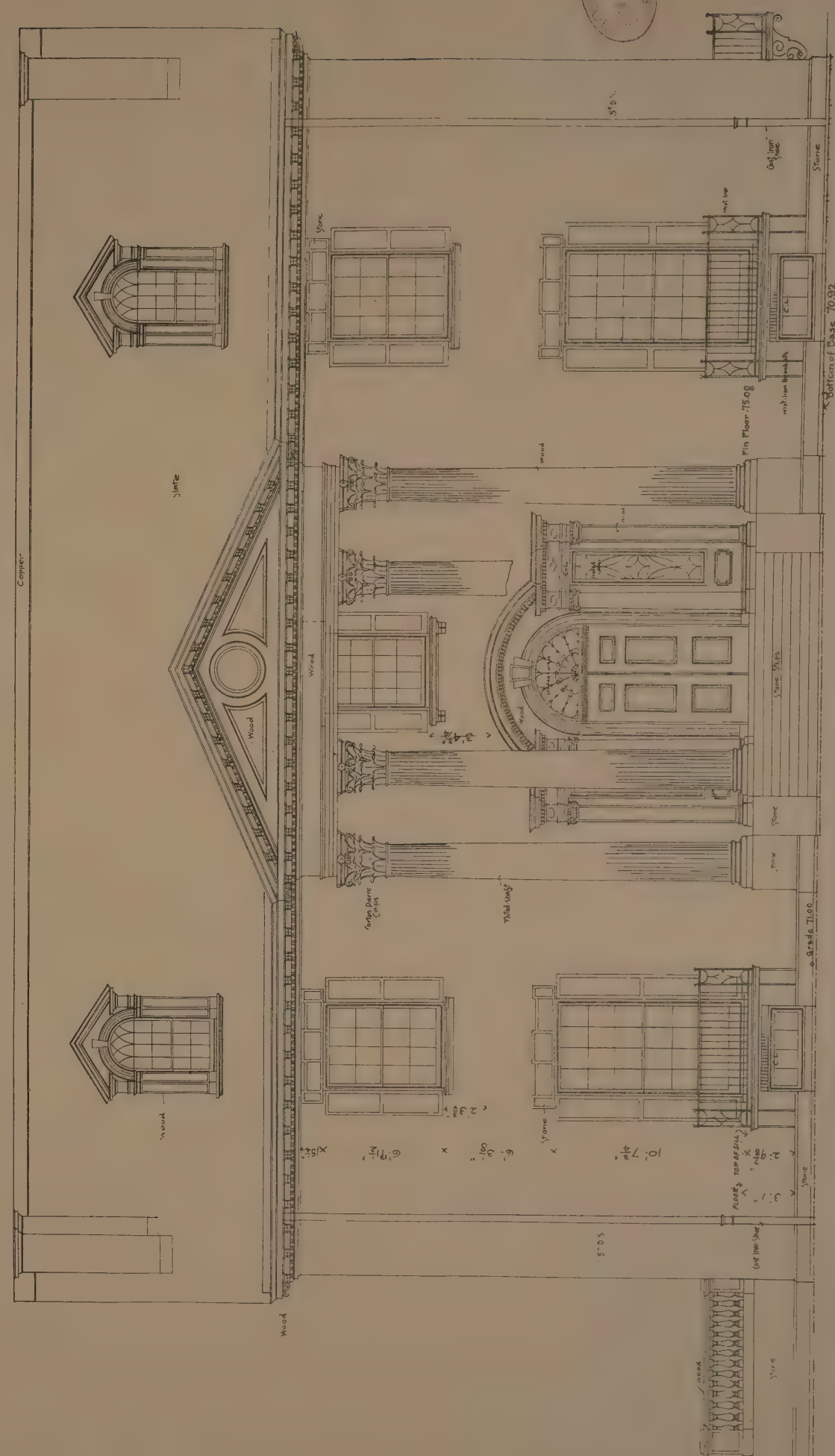
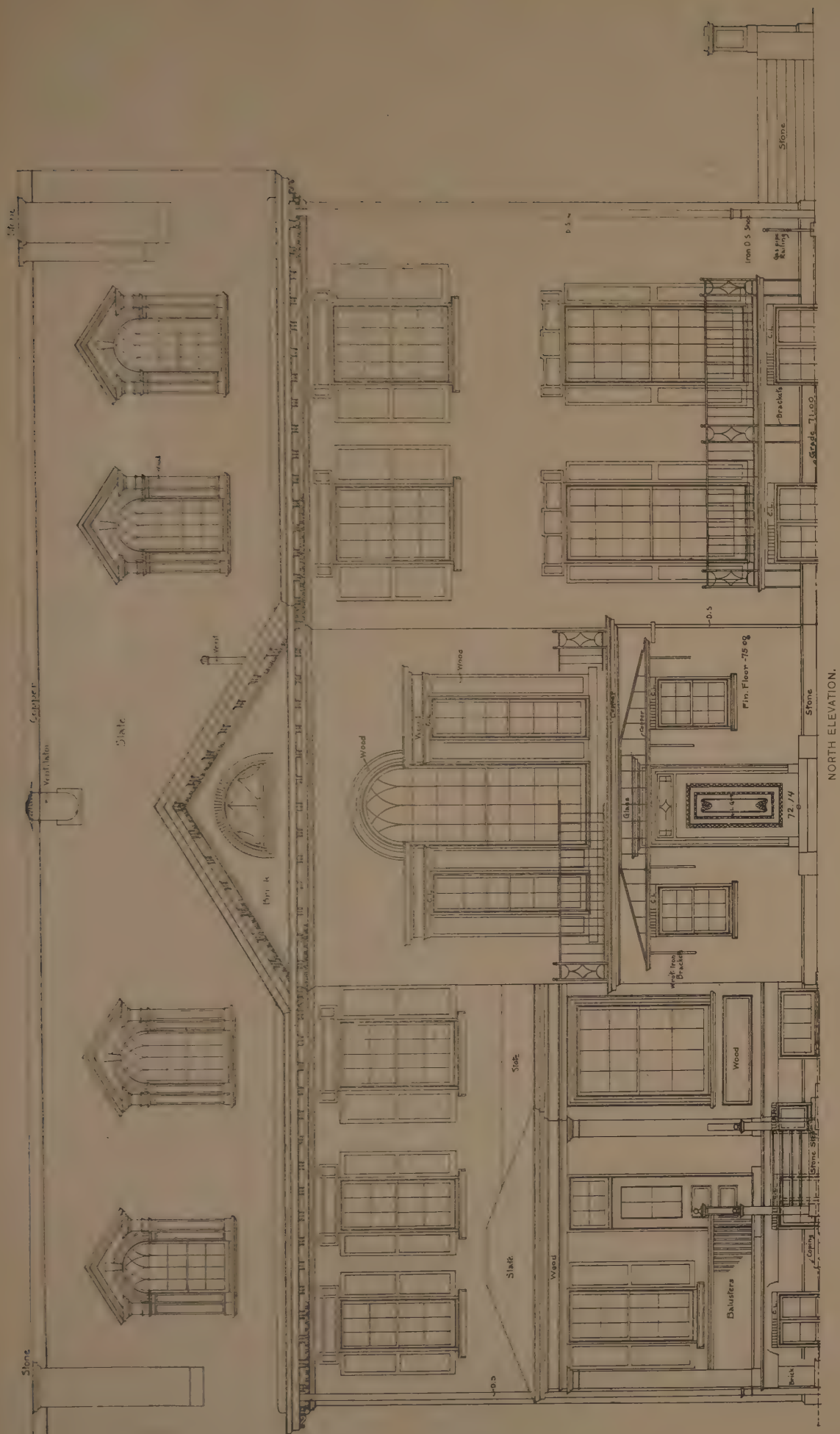


SIDE ELEVATION.



FRONT ELEVATION.

HALL OF LANGVAGES, UNIVERSITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY.
MCKIM, MEAD & WHITE, ARCHITECTS.





RESIDENCE, WASHINGTON TERRACE, ST. LOUIS, MO.
EAMES & YOUNG, ARCHITECTS.

TON
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1900



HALL OF LANGUAGES, UNIVERSITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY
MCKIM, MEAD & WHITE, ARCHITECTS.



FRONT VIEW.

HOMES FOR AGED PEOPLE, CAMBRIDGE, MASS.
ICKNEY & AUSTIN AND WILLIAM E. C.



THE BRICKBUILDER,
JANUARY,

1900.



HOMES FOR AGED PEOPLE
 STICKNEY & AUSTIN ARCHT. & BLDG. CO. CHICAGO, ILL.



THE BRICKBUILDER,
FEBRUARY,
1900.



HOUSE OF PETRARCH, AT ARQUÀ, NEAR PADUA, ITALY.

VOL. 9
NO. 2

THE BRICKBUILDER

FEB.
1900

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

ROGERS & MANSON,

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

	PAGE		PAGE
Agencies.— Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

ACKNOWLEDGMENT.

WE desire to express our appreciation and gratitude for the kindly indorsements of our new departure, which have been so abundantly bestowed upon us by our subscribers.

It would have been quite impossible to make acknowledgment in each instance, therefore we take this method to thank our supporters, and perhaps better, assure them that it will be our endeavor to merit their continued approval.

In returning our thanks, we are not unmindful of that eloquent tribute which has come in the simple form of a “renewal,” and it is our hope that to one and all of our friends may come, as a result of some greater effort, that encouragement which has been so liberally bestowed upon us.

THE PUBLISHERS.

ARCHITECTURAL TRAINING.

ARCHITECTURE can to-day fairly be classed as one of the learned professions. In conversation a short time since with one of our most successful architects, the fact was developed that his training previous to starting in business for himself had been limited to less than a year in the office of an architect whose work certainly does not rank among the best, followed by a single trip to Europe. While this, perforce, answered the purposes of a man of undoubted genius, it is surely not enough, if we may judge by the average practitioner,

who feels called upon to devote four years or more to technical training in the schools of this country, several years of hard study and travel abroad, and, in addition, four or five years in an office. The duties and responsibilities of the profession are increasing so fast and are so much in excess of anything that was thought of thirty years ago that, although there are some most notable exceptions, the qualifications of a modern architect are acquired only after long years of training. Professor Ware used to be quoted as saying that an architect did not become of age until he was at least thirty, implying that his architectural childhood extended over a long period of probationary years. We can see nothing but hope in a situation of this kind, for realizing how vastly extended the scope of the architect's possibilities becomes by reason of a thorough preliminary training, taking into consideration also the fact that no one feels we have yet anywhere near approached the meridian of our architectural development, it is a thoroughly good sign that our architects are not only called upon but are willing to devote long years to careful preparation.

THE executive mansion at Washington, while by no means on a par with the residences of royalty or of state executives abroad, is one in which we may at least have sufficient pride to preserve it from injudicious or ill-considered alterations. The action of the Fine Arts Union, of Washington City, protesting against the bill introduced into Congress for additions to the White House, deserves the cooperation of all who are interested in seeing the direction of our national architecture put in proper hands. The protest of the Union is against “any alteration or addition to the executive mansion being devised or executed without the examination or the advice of an expert commission of architects, landscape architects, and sculptors of national reputation.” It would seem almost needless to urge any such protest as this; rather, that no legislator would for a moment dream of following any other course than the one which this protest suggests. But our legislators are not chosen for their artistic perceptions, or at least if they are the choice has been a most unfortunate one in the main, and it is sincerely to be hoped that the White House will not be injudiciously meddled with.

THERE is trouble in the granite market between the workmen and the quarry men, the differences springing principally from matters of compensation. We see it stated in the daily papers that the manufacturers maintain that brick, terra-cotta, and other materials could profitably be substituted for granite if the demands of the workmen were to be conceded. While we are

interested in seeing terra-cotta assume the place to which we believe it is entitled in our architectural development, and while we have every evidence to believe that it has obtained a position where it is not a competitor but rather an equal with other materials, we cannot feel that the loss of granite or any other stone is to be a gain for terra-cotta; but that, in proportion as the labor troubles are adjusted in such a manner as to leave the market free, all the departments of building will be benefited, and there is no doubt in our mind about brick and terra-cotta receiving their full share of orders. The labor troubles seem to be ever with us as a part of national prosperity, and we can only hope that an adjustment may be made between the men and the quarry owners by which the granite workers can keep up with the demand.

THE death of John Ruskin in a way marks the close of a distinct period of development in modern architecture. While only one of the many who contributed to the renaissance in taste which has marked the latter half of the nineteenth century among the English-speaking peoples, the part of Ruskin in the development was a very important one. He was one of the first of modern art critics to realize and formulate the distinction between good taste and merely correct architecture. Like all reformers he carried his beliefs to extremes, and in the honest seeking after the traditions of truth and beauty which have come to be associated with his name he laid down some canons of taste which the calmer judgment of the end of the century has not been inclined altogether to accept. But when we consider the condition of England and America previous to his advent it is not to be wondered that the pendulum with him should have swung to the other side. He was a man of most keen susceptibilities, one with whom taste was *sui generis*, and not in the slightest degree dependent upon somebody else's diction or example. He thought out his own ideas in direct opposition to the inherited teachings of his generation, and by the freshness and clearness of his ideas, no less than by his marvelous mastery of the English language, he was able to profoundly influence the art thought of the age. Moreover, he was the first of modern critics to fully appreciate the artistic qualities of terra-cotta and brickwork, and although the title of his perhaps best-known architectural work, "The Stones of Venice," does not imply much recognition of burnt clay, his fondness for the color and texture of terra-cotta, for the delicate combinations of brick, burnt clay, and marble, and for the color sense which is so marked a feature of the North Italian work show how strongly the brick and terra-cotta impressed him. The immediate result of the new school of thought and criticism, of which he became the acknowledged head, was in England to bring about a revival of the brick and terra-cotta arts, and one of the most tangible results of "The Stones of Venice" was the development of the possibilities of burnt clay. Ruskin's early writings are associated with the successes of the English potters as well as the terra-cotta artists, and the revival which he was so largely instrumental in starting spread wherever English has been spoken, so that for years the name of John Ruskin was a synonym for what was best and purest in the art of architecture.

The present attitude of the world towards art seems to us a more rational one. We are not carried to the extremes that Mr. Ruskin advocated. We do not feel the need for the deliberate refinement in subordinate details which was such a satisfaction to him, and we look at the matter of truth in design as one of relation far more than absolute fact. We have broadened our scope, enlarged our facilities, and are prepared to study architecture rather than to consider it a gushing effervescence of spontaneity. At the same time, however far we may have departed from the letter of the English reformer's teachings, the spirit is ever with us, and the essence of his works when stripped of the natural extremism which seemed to be a part of every apostolic thought has come to be accepted by the world as typifying our ultimate aims and our highest aspirations. Mr. Ruskin has for years ceased to be an active factor except by his past, and his peaceful death has come at the completion of a life in which his principles were fully explained and during which he was given ample time to work out all his theories.

THE death of the Duke of Westminster removes one more of the notable ground landlords of London who have done so much to develop the possibilities of economic dwelling construction. One of the first attempts in this direction was made by the Duke of Bedford, who selected a suburb a short distance from the crowded portion of London and proceeded, with the assistance of E. W. Godwin, Norman Shaw, and several of the brightest and most progressive English architects, to evolve a town off-hand, building entire new streets, with row after row of cozy, homelike dwellings clustered about a central square given up to a clubhouse, a charming little church, a village inn, and a public library. Our recollection is that all these buildings were constructed of brick and terra-cotta, and the influence of a development of this sort has been felt in a great many ways in different parts of the world, these houses at Bedford Park forming in some respects a model after which several moderate-priced villages have been built. The Duke of Westminster has left an excellent record as landlord and as a citizen of the metropolis, and has been a constant patron of the best phases of English architecture.

BY the death of Paul Sedille France has lost one of the most broad-minded members of the architectural profession. While we would not be inclined to accord the distinction which has been claimed of his being the architectural successor of Charles Garnier, he was a man of strong individuality, and one who was ever ready to take the good from architecture of all countries, in this respect being in marked contrast with most of his *confrères*. A man of large inherited fortune, who had in addition earned a considerable fortune by his profession, he was in a position to assert an independence of mere academic limitations and to influence the realization of his ideas to an extent that the French architect seldom enjoys. He was an aristocrat by instinct and the work which he has left behind him is in many respects some of the most interesting which the latter-day school of French architects have produced.

The Minor Brickwork of the Apennines. Siena.

BY WALTER H. KILHAM.

AS the "accelerated" train winds its leisurely way from Empoli over the red soil of the Tuscan up-



SIENA, GENERAL VIEW FROM CHURCH OF SAN DOMENICO.

lands there is little to indicate the wonderful stores of art treasures awaiting us ahead in the lonely old town on its windy hilltop. Dry, brown, and bare the hills appear in the November morning, dotted here and there with plain and poor-looking farmhouses, until, trundling around a curve in the steady up grade, our narrow car window suddenly shows us a magnificent sweep of red brick wall of tremendous height and studded with towers, swinging majestically away around the slope of the hills above the railway. The train comes to a stop right under these mighty parapets, and seizing our bags and sketching stools we set off, full of anticipation, up the winding street to the town. Just inside the gate one of the finest and oldest industries of the place is put in evidence by a large manufactory of wrought iron, the excellence of whose output is attested by the beautiful torch holders set in the outside walls.

The "Via Garibaldi," by which all good Italian towns are entered, now swings to the left in the regulation manner into the "Via Cavour," and at once it seems as if four hundred years had rolled back, leaving us standing in a street whose architecture and people indicate the time of the Middle Ages. Dark and gloomy Gothic palaces rise side by side with the architectural productions of the golden age of the Renaissance; the narrow and winding street is peopled with the cloaked and slouch-hatted figures of the melodrama, among whom

teams of great white oxen with horns of preposterous length slowly drag loads of produce over the stone pavement.

Siena is an example of a mediæval town, which has come down to us intact, its features embalmed as it were in the dry air of its upland moors. A terrible pestilence which depopulated it in the fourteenth century so stunted its growth that it never recovered its prosperity, and the old streets and houses are presented to us unspoiled and unchanged by modern improvements. The space enclosed by the city walls rests on the ridges of three hills, which radiate from the center, star fashion, leaving deep valleys between. The present buildings are almost entirely confined to the ridges, while the valleys, once the abode of thousands of citizens, are given over to gardens and orchards. It is this mingling of crowded streets and vast empty hollows and gardens which gives to Siena a topography which strikes the stranger as peculiarly expressive of the awful fate which overtook the community, and converted the arrogant and prosperous rival of Florence into a secluded and back-going provincial town. But the era of prosperity lasted long enough to erect one of the finest cathedrals, certainly the finest campanile, and dozens of the most beautiful palaces and houses in Italy, beside providing the city with works of

art in the way of paintings, carvings, and iron-work, which will always make it artistically one of the most important towns of Europe.

Siena is emphatically a brick town. It is true that the cathedral and a few other buildings are built of stone or marble, but the red brick, rich and brilliant with age, is the prevailing material. Molded bricks are used to a considerable extent, but many of the cornices are made of plain brick arranged in tasteful patterns.



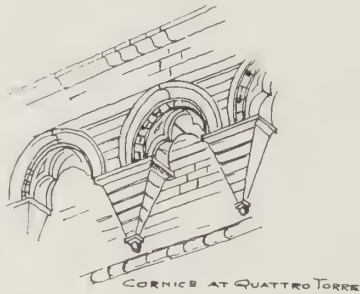
FONTE OVILE, SIENA.



BRICK CORNICE, PALAZZO POLLINI, SIENA.



Two general types of cornices appear: the arcaded or Gothic type and the modillioned or Renaissance. The Gothic cornices, which sometimes are surmounted by battlements, consist of a series of small arches, either pointed or semicircular, resting on corbels, which may either be made by projecting square-edged courses of brick each a little further out than the one below it, or by cutting of the bricks to a diagonal plane, which gives at a distance the effect of a regular stone construction. The soffits of the arches are cusped with the aid of terracotta pieces, and dentals, block and billet moldings, and molded string courses are brought in above and below to give the requisite appearance of strength to the composition. The projection is often considerable, and more than we would be inclined to use in modern times.



The Renaissance type is richer, and is more likely to be surmounted by the overhanging Italian wooden eaves with hanging gutter. More terracotta is used in these, and all the members of a regular Corinthian cornice are introduced. The modillions are decorated with beautifully modeled acanthus leaves and the egg-and-dart and dental courses are given all their due prominence. The cymas are decorated in the finest examples, though in some they are simply expressed by molded bricks on edge. The cornice of the Pollini Palace, illustrated by the photograph, is one of the best of these. A large scale detail of the façade was published in *THE BRICKBUILDER*, Vol. VI., No. 5.

It is not to be denied that much of the attractiveness of old Siena comes from the delicate tones with which the ages have colored the old brick buildings which line its streets. Common red brick is a material which grows old gracefully, and every century adds its charm to the glowing walls. I do not remember having seen elsewhere such a red as glows on the old Fonte Nuova, while

the front of the Public Palace, with greenish stains creeping over the weather-beaten bricks, and black and white marble escutcheons, is, with the similar façade at Piacenza, the finest example of a literally "green old age" in architecture. Again, perhaps such masses of the material are not to be found elsewhere. Here are dozens of houses propped on brick retaining walls 30 or 40 ft. high, strengthened with gigantic buttresses and arches. Here are great churches, where all the ornamentation has been lavished on the interior, leaving to the outside only the rudimentary masses of the architectural scheme done in the rough, unveneered brickwork, which are yet grand because of harmony in size and proportion. Here, too, is the graceful and slender campanile of the Mangia,

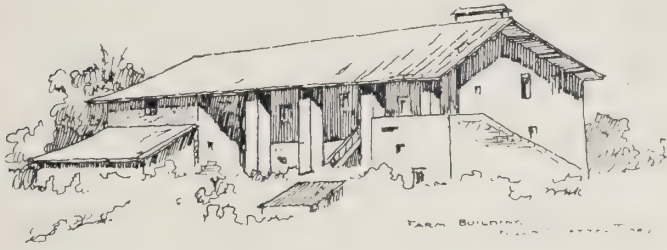
with its faithful encircling audience of grimly serious old, red Gothic palaces which have for centuries listened to the sound of its bells across the old town square. Very serious and very stately is the brick architecture of old Siena, with none of the extravagance and abandon of the work at Pavia or Milan.

The more famous palaces of Siena have been so well and often described that I shall limit this article to some of the smaller and more picturesque monuments with which the city is replete. Among these none are more attractive than the fountains or public washing places, of which there are several in the lower parts of the town, beside some just outside the walls. These pools are generally covered with massively vaulted brick roofs supported on great piers and Gothic arches of beautifully molded

brickwork. The Fonte Nuova is one of the best known of these. It dates probably from the thirteenth century,



and has a façade of two fine pointed arches in molded brick, with the outer rim of the archivolt marked by a



finely cut pattern in the same material. A small dwelling which rests on this imposing substructure is approached by a curiously arched brick staircase, shown in the annexed sketch. The putlock holes remain in the brick walls, as they do in so many Italian buildings, and give with the weather-stained façade a remarkably imposing appearance. The coloring of the old red bricks is exquisite.

The Fonte Ovile, surrounded by olive trees in the picturesque hollow below the great city gate, with its garrulous laundresses, to whose laborious cudgeling are committed the shirts and shifts of the neighboring quarters, is another of quite similar construction. It is some 30 or 40 ft. high, and the two arches are separated by an engaged column with a carved capital, all done in brick. The central pier is about 4 by 7½ ft. in plan, which gives some idea of the massive and solid appearance of the building. The dark and cool water gushes from the back of this lofty cavern, forming a delightful contrast to the hot and dusty roadway.

More secluded and therefore less known is the situation of the Fonte Piscaja, outside the Porta Camollia. This is a considerably larger affair, having three sturdy arches, which support, above a finely proportioned cornice and ornamental brick courses, a building of considerable size and commonplace design, probably a later erection.

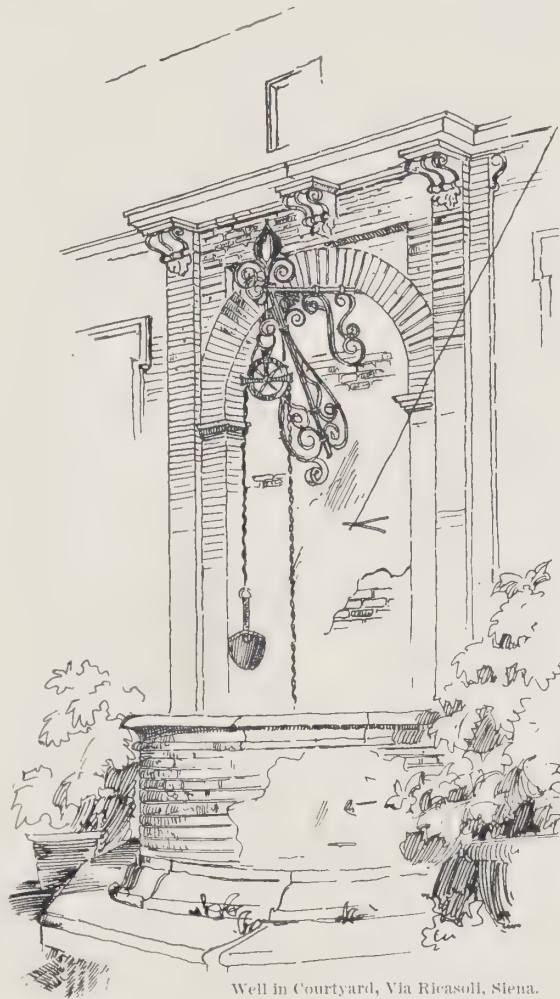
In the historic Contrada dell' Oca, the "Ward of the Goose" (the various quarters of Siena are named after birds and animals), under the cliff on which stands the great church of San Domenico, and near the birthplace of St. Catherine, is the less ornate but possibly more dignified Fonte Branda, long the favorite spring of the tanners and dyers of the vicinity, and even praised by Dante in the "Inferno," "Per Fontebranda non darei la vista."

Others still are more ruined architecturally, like the Fonte Follonica, hidden deep in the gardens behind the

Via Ricasoli, in the search for which I chanced upon an exquisite wrought-iron crane and wheel set in a stately arch in an old palace court. After finding one of these, one has always a feeling that each heavily barred courtyard gate conceals another, and I am afraid that in default of the courage necessary to ring up the porter and ask him if he had an ornamental well-curb in the house we did an entirely uncalled-for amount of keyhole peeping in the aristocratic old street.

Beautiful and interesting bits of brickwork are not confined, however, to the city proper, and a walk in any direction outside the walls will result in finds well worth preserving in the sketch-book. The gateways and barbicans themselves have finely molded arches and corbelled and arcaded cornices in the style of the very best period, and near the Porta Pispiri I remember a semicircular bastion with a charming Renaissance cornice in the most delicate proportions. Following the highway from this gate down the long slope into the misty valley, you cross a stream by a picturesque bridge, and mount again by verandahed farmhouses with projecting eaves and outside stairs, until in about two miles you arrive at the old Italian manor of "Quattro Torre," its four towers, medallioned walls, and arched court standing among the terraces and balustrades of a decayed garden with the dependent farmhouses at a respectful distance. Or in the other direction, out from the Porta Camollia, are the Palazzo da Diavoli and the chapel beside it, better preserved and more famous. The brick farmhouses of Siena province deserve more attention than they generally obtain, and are among the most picturesque specimens of Italian rural architecture. The natives are courteous and intelligent, and fairly well to do for Italy, while the scenery is delightfully characteristic and full of atmosphere.

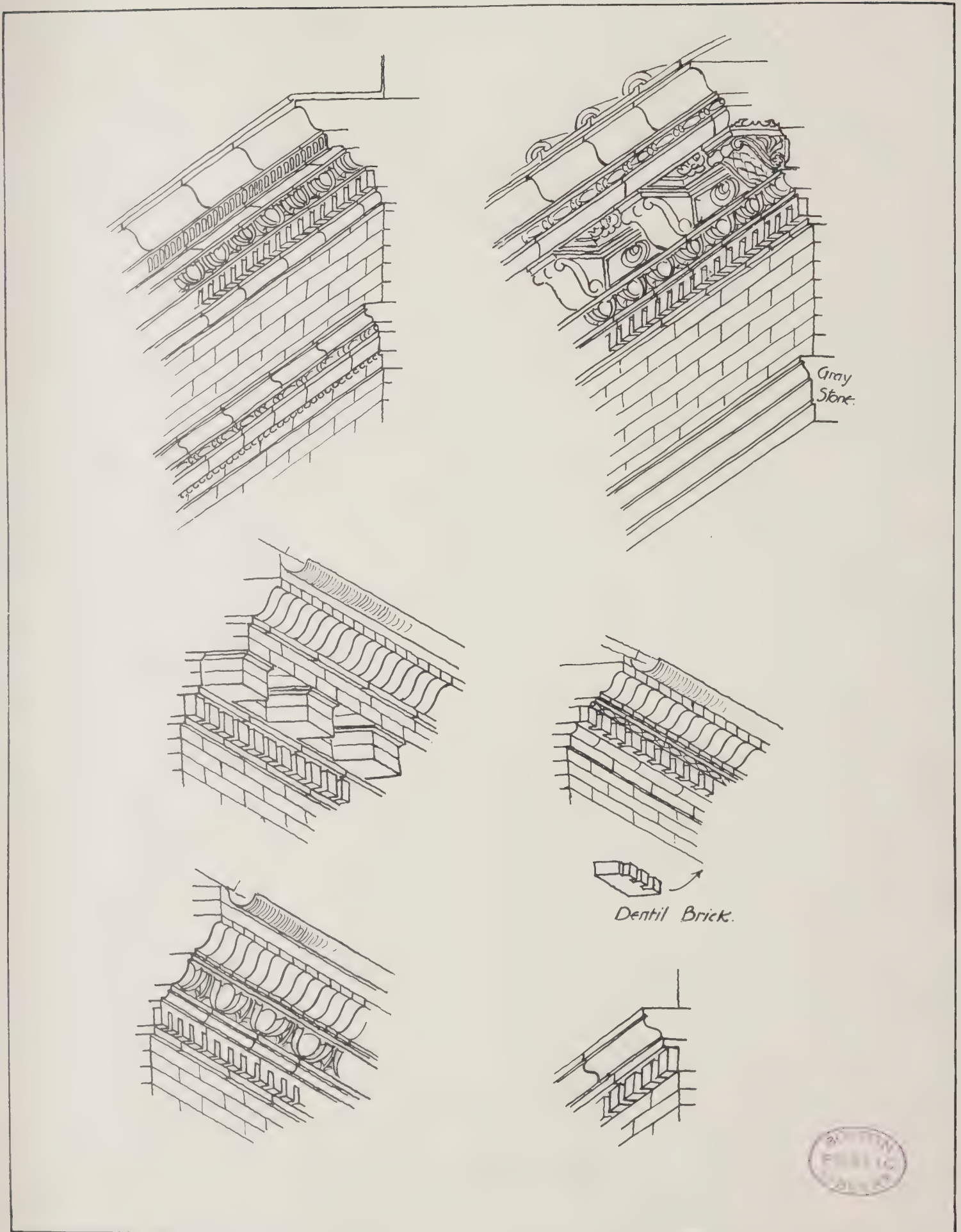
Returning to the city from one of these excursions, one can hardly fail to be impressed by the gigantic masses of the red brick churches, which are placed on most of the promontories above the roads. The gates are usually



Well in Courtyard, Via Ricasoli, Siena.



FARM HOUSE NEAR SIENA



BRICK CORNICES, SIENA. JAMES P. JAMIESON, DEL.

placed topographically somewhat lower than the neighboring land, so as to secure an easy grade to the valley below, and almost every point of the star is dominated by the walls of some church building, mighty as only Italian churches can be. In the city proper every street



Church above City Gate, Siena.



Church of the Innocenti, Siena.

and lane abounds with carvings, shrines, wrought-iron balconies, torch holders, and wealth of architectural detail sufficient to hold an architect for weeks.

The cost of living in Siena is very low, and if it were on the direct line between Florence and Rome its artistic and historical wealth and delightful climate would doubtless attract a great many more visitors than at present. The style of work in brick and terra-cotta is quite distinct from that in Bologna and North Italy, while the hilly nature of the town site produces unlooked-for complications and novel solutions of the designers' problems.

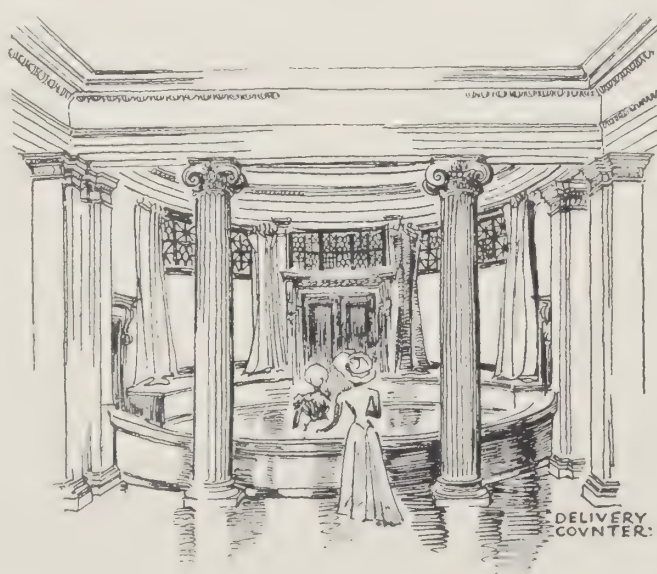
WE are now in the midst of an era of great buildings, great at least in one dimension, but our mightiest efforts of to-day fade into insignificance when compared with the tremendous achievements of periods of the past, when steam engines, swift moving derricks, and all the modern paraphernalia of building operations were unknown. The Colosseum at Rome is an illustration in point. Our readers are doubtless familiar with it, and also with Trinity Church in Boston, which, while by no means a large church, is a very sizable structure. A prominent builder told us, a short time since, that if he could have at his command the number of men who were daily employed upon the actual construction of the Colosseum, with the materials to draw from which were lavished so extensively in that Roman structure, he could build, equip, and finish a structure equal to Trinity Church for every day in the year.

A Public Library, Cost One Hundred Thousand Dollars.

BY J. A. SCHWEINFURTH.

TO one who knows a New England town of twenty-five thousand inhabitants, where this library is supposed to be located, this problem requires some little consideration to meet the by no means easy conditions. For nowhere else are there a people more critical or more intelligent, and quick to appreciate such opportunities literary and artistic as may be offered them. The people here are quite as up to date as in many larger cities; many of the townspeople spend much of their time in some neighboring large city; many have traveled far and near, and all know what they want, and usually want something "modern" instead of something which will remind them of the days of their forefathers. Nowadays, when oftener than not, even in such a small place, librarians are graduates of some of the library training schools or institutes, libraries have changed from warm, rich, and cozy but dark interiors to a more business-like arrangement, better suited to the needs of a public, who are not all students or bookworms. With one hundred thousand dollars to spend on this building, care should be taken not to produce an institution which the town cannot afford to run properly, or which should, on its main street or square, be too conspicuous an example of some one's munificence. It should be simple, dignified, and have the rare charm of belonging to the place where it has been erected—look as if it had always been there. Nothing could be more inappropriate here than the decadent vagaries of a Parisian boulevard, which always remind one of a people who had rather drink of the muddied waters than to imbibe further up stream the waters of a purer, simpler style of architecture.

The library should be planned with an eye to economy of working force, besides making a pleasant and cheerful



sort of meeting place, for those people who go get books, glance at the latest magazines or illustrated papers. The women like to have a little chat about this book or that, etc., and to an atmosphere of refinement produced by following rather severe classic precedent, can



PERSPECTIVE.

be added a warm, cheerful homelike feeling, together with an air of artistic taste, for this town has no art museum, art stores, or other similar attractions of a large city.

Librarians in general do not seem to be agreed as to what constitutes a good library plan, although agreed as to what is not. The librarian of one of the largest public libraries in this country, when besought for a few crumbs of wisdom on this subject, said he had no time,

—it was his busy day. On the occasion of a competition for a large public library, some years ago, one of the competitors, who had practised his profession successfully thirty-five years with honor and much profit, associated with himself a well-known library expert. The result was, this competitor did not even attain to a mention, and the prize went to one who had never built a library, and little of anything else. On another occasion a competitor re-

tained a librarian to help him, and was beaten by people who apparently were not troubled by the latest ideas in the librarian's world.

Possibly there will be a happy day when the librarian of the future, reclining on a divan, surrounded with pretty assistants, will only be required to say "*book*," and the book will be there. Then it will be agreed that the successful library plan will have arrived. But then the professional architectural competition experts, and those who have looked into the courtyard of the "*École*," will arise and condemn the plan, as it "*is not just*," is not symmetrical, has no "*central axis*"—if there is a room here, there must be one on the other side of the building in a corresponding position, the same size and shape, as if people were supplied with wings, the roof taken off, and they "*enjoy*" a "*beautiful symmetrical plan*," as

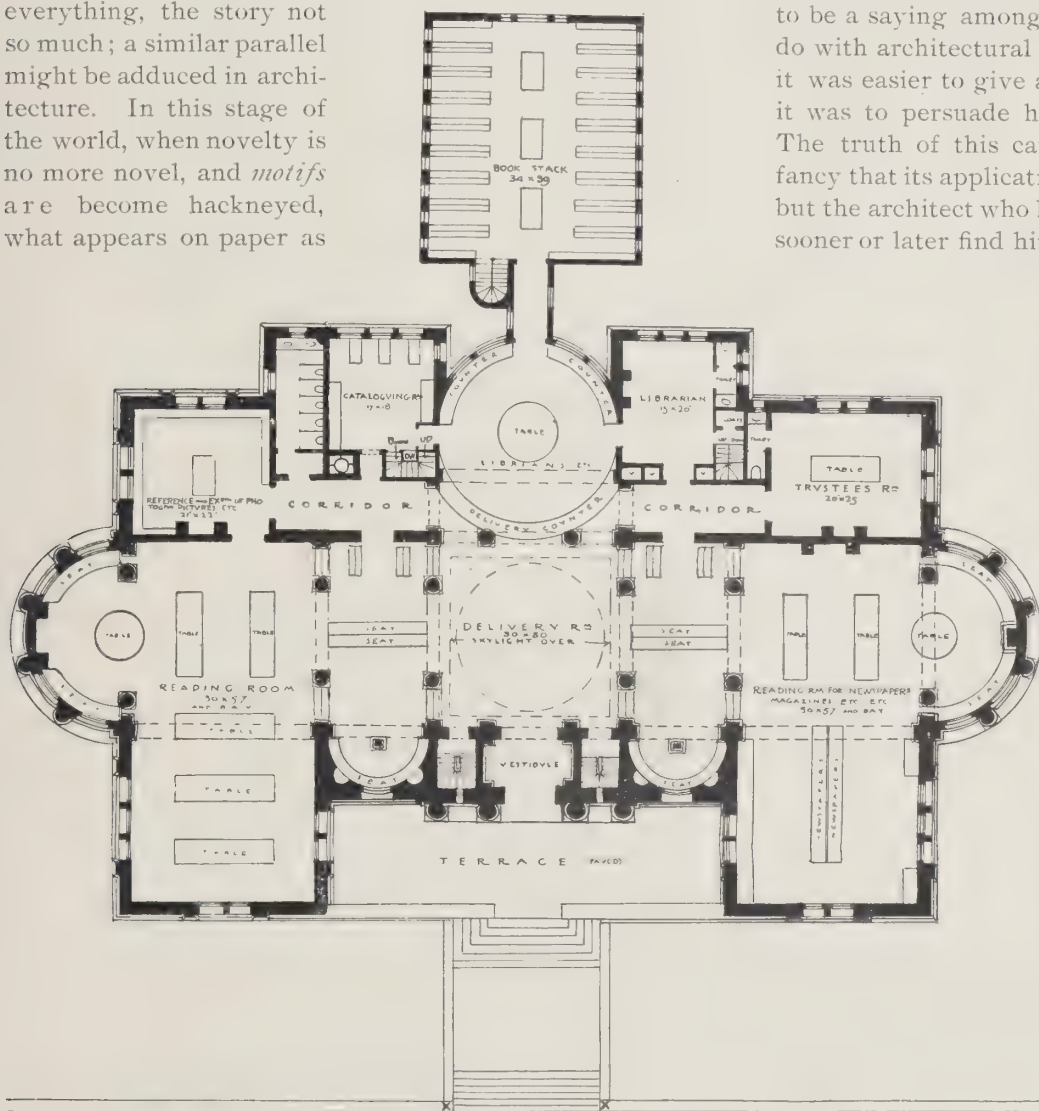
they fly over the building. Some librarians would prefer

LOOKING TOWARD
READING ROOM.

ELEVATION.

in these conditions under consideration a one-storied building. Here there is money and land enough for this. The unpacking room is in the basement immediately under the cataloguing room, with stairs and a book lift leading to it. Both this room and the librarian's room could have a mezzanine story if required. Toilet rooms for the public are in the basement, reached by stairs at each side of vestibule.

A children's room, now considered necessary for every library of any pretensions, is located in the basement at rear, as the ground slopes down here. This is not objectionable, as an attendant is usually required here, whether located on first floor or not, and in basement children would not produce the stir or confusion to distract the reader. As in the case of literary work, there are some who think that "style" is everything, the story not so much; a similar parallel might be adduced in architecture. In this stage of the world, when novelty is no more novel, and *motifs* are become hackneyed, what appears on paper as



PLAN.

dull can be by a careful attention to proportion, detail, etc., turn out fine and pure enough. For an architect's work and study by no means stop when the design is made. The execution, the care spent in detail, gives to a building the stamp of individuality and refinement.

The exterior walls will be faced with light gray, Roman shape bricks, with wide, white horizontal joints, and vertical joints to be closely laid. The trimmings of terra-cotta of similar shade. The roof tiles, finials, etc., shall also be of glazed, dull-green terra-cotta. The whole building shall be of fire-proof construction throughout.

PERMANENCE IN BUILDING.

WE have frequently deprecated in these columns the excessive haste which characterizes modern work, accompanied as it generally is by neglect of good construction. The discouraging tendency of haste upon good architecture is an element which counts for more in our national development than we perhaps sometimes appreciate. The policy of "good enough" is what has transformed many a promising young architect into a mere commercial hack, who though theoretically in love with his profession is simply after the dollars. It takes so much time to study that unless an architect will be most strenuous in demanding the opportunity he will find himself drifting in the wrong direction. There used to be a saying among some of the salesmen who had to do with architectural goods in this part of the world that it was easier to give a Boston man what he wanted than it was to persuade him that something else was better. The truth of this can hardly be questioned, though we fancy that its application need not be restricted to Boston; but the architect who lets that fact influence his design will sooner or later find himself adrift. Broadly speaking, the

conscientious architect will never allow considerations of cost or time to influence his judgment or decision as to what is, under the circumstances, right or best for the building. This implies neither rank extravagance nor oblivion to the client's wants, but is, in fact, the truest consideration of the real necessities. We had an illustration brought to our notice a few days ago of the deplorable results to every one concerned of undue haste in building. An architect had made a very clever design for a small structure. He had hit it about right without being obliged to spend a great deal of time in study. The contract was let to a thoroughly good builder; but the condition of the steel market and some labor agitations conspired to so delay matters that the building, which was to have been completed within a year, and could have been done in proper manner in that time, had hardly more than the foundations laid six months after the

contract was signed. The owners insisted on the structure being completed on contract time. The builder was able and willing to do so, and though the architect protested, his protest was neither sufficiently loud nor efficacious, and the result is that to-day we have a building which was, to be sure, completed in contract time, but in which the finish is making faces at all beholders, the masonry is settled, several of the sills cracked, and there is about this structure, less than two years old, a general air of dilapidation, which is the natural concomitant of too much haste.

Minor Brick Chateaux in France.

III. Late Renaissance.

BY WILLIAM T. PARTRIDGE.

BESIDES those treated in our recent paper, the later period of the Renaissance under Henri II. brought two innovations that entirely changed the character in the detail of the smaller châteaux.

The first of these was rustication: the quoins and other stonework, which had up to this time been bonded flush with the brickwork, were now set slightly in advance of it. This characteristic became a favorite feature in doors, windows, cornices, and panels.

The second was a reversal in the scheme of color. The brickwork now marked the principal architectural lines in red, the body of the building being of colored brick or stucco. The wall spaces were decorated by stone panels, sometimes with niches containing a bust.

The masses, however, still followed the early traditions, though the towers were often replaced by wings.

In the little *Château d'Ormesson*, in the department of Seine et Oise, for example, the corner turrets are rusticated and corbeled out in a manner interesting and unique. The architraves, panels, and portions of the rustication are of brick; the body of the building is covered with stucco.

The drawings of this building, published by *Sauvageot*, show considerable differences in the treatment of the lintels over the windows. These were probably altered in the eighteenth century, the door showing a motive of the time of Louis XV.

The *Château de Falandrec*, in Orne, was built in the seventeenth century, having been begun in 1319. How far an older building influenced it we cannot tell,

but the château exhibits no radical departure from the recognized Gothic type. It is said to have been influenced by the work at Saint-Germain-en-Laye, especially in the staircase, which is of brick and stone, cleverly vaulted.

The exterior of the building is of stucco with strongly colored brick pilasters and string courses. In the central part the pilasters extend from the base to the cornice, while those of the corner pavilion start from a higher level. The composition is charming. The soft color of the high roof to which time has given a bloom, the stucco sufficiently discolored to lose its harshness, and the dark red lines of the architecture combine to form a picture well set in a background of dark foliage.

The seventeenth century *Château de Gournay-sur-Marne* is an example of the extreme to which rustication was sometimes carried. Its quoins, window architraves, and lintels are all rusticated. The wall surface, which is of brick, is treated as a panel, the brickwork projecting an inch or two; the larger spaces have also an applied panel framing a bust. The central motive is double, under a single pediment. The Mansard roof here appears for the first time upon these smaller buildings.

The little *Maison de Mademoiselle de Montpensier* at Pont-l'Évêque, which the searching archæologists tell us

was not hers at all, but belonged to the Fresneys, is a small building of the period of Louis XIII. It is quite picturesque in its treatment, the dormers which seem to have spaced themselves breaking through the cornice of the towers. The broad wall space between the middle windows is divided by flush quoins, if such a feature can be so called. The center, however, is marked by a little porch with a

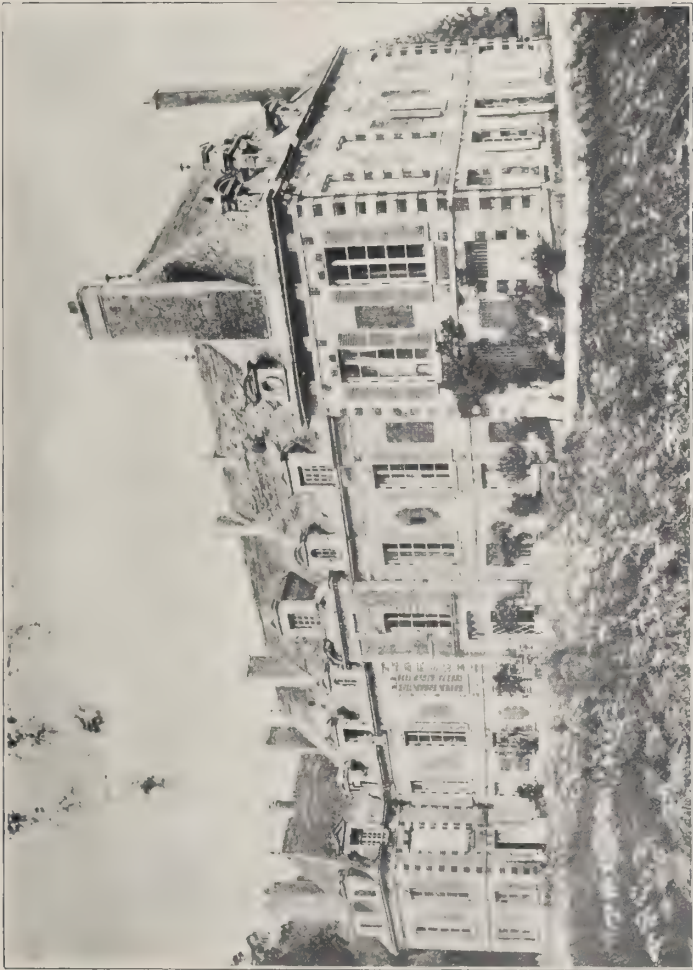
roof supported by columns somewhat similar in shape to the towers, between which it forms a sort of connecting link. There are a number of smaller houses of this char-



CHATEAU D'ORMESSON.



CHATEAU DE GOURNAY-SUR MARNE.



ABBAYE DE LA CROIX-SAINT-LEUFROL.



CHATEAU DE DAUBEUF.



CHATEAU DE FALANDRIE.



CHATEAU DE BALLEROY.



MAISON DE MADemoisELLE DE MONTPENSIER.

acter—one can hardly apply the word *château* to a building of this size—that will repay a visit and study at this place.

The *Château de Balleroy* and the *Abbatiale de la Croix-Saint-Leufroi*, as is readily seen, are both of the familiar type, although the central tower, the predominating feature in the one, is reduced in the other to a small pediment.

The *Château de Balleroy*, in Calvados, is typical of the extreme type in which the staircase tower is the principal feature of the façade and the adjoining wings recede. It is heavily rusticated, and the wall surface of brick is everywhere used as a background, contrasting with the architectural lines in stone.

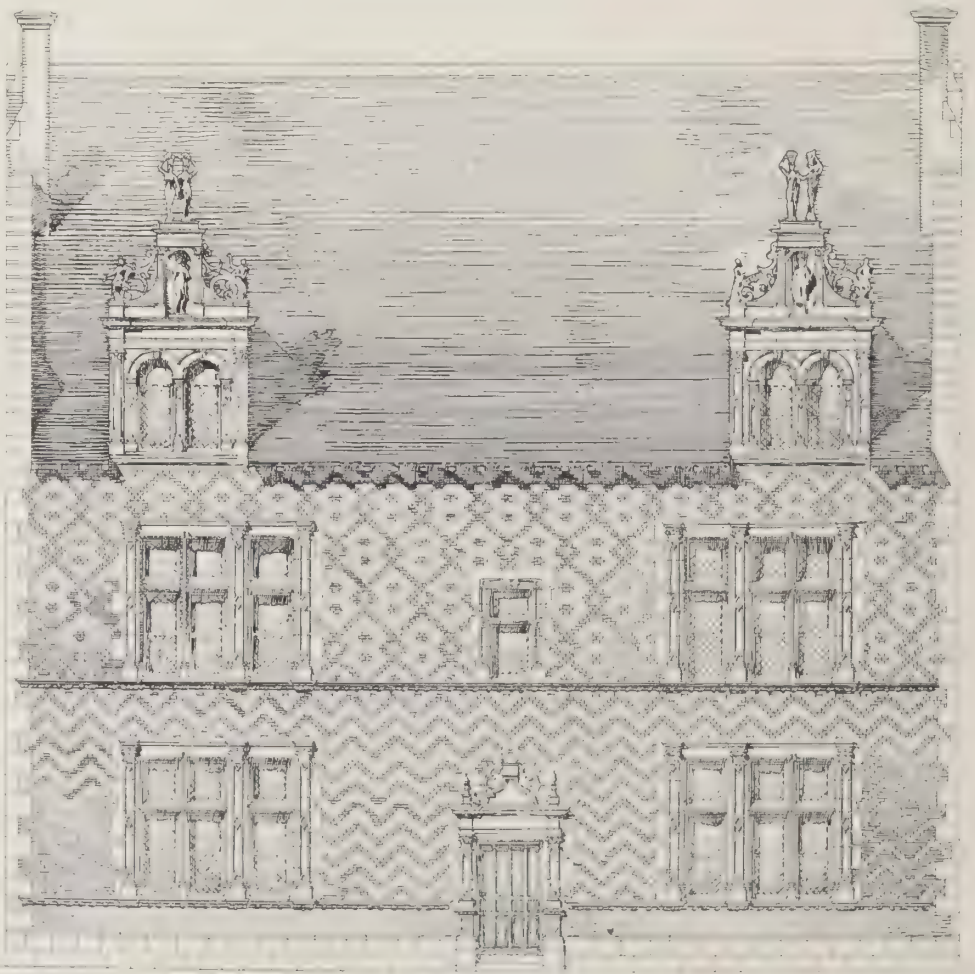
In the *Abbatiale de la Croix-Saint-Leufroi*, on the contrary, the central pavilion is reduced to the minimum; the wings advance, thus gaining in importance, while the brick is used in panels for its color alone, the surface of the wall being in stucco. This arrangement certainly adds to the gaiety of the effect. Another building of this same type is the *Château de Daubeuf* in the department of Seine Inferieure. It is heavily rusticated, the wall surface of brick being ornamented with stone panels.

In these later examples the departure from the early Gothic châteaux seems extreme; but they are nevertheless evolved from those semi-dwellings, semi-fortresses.

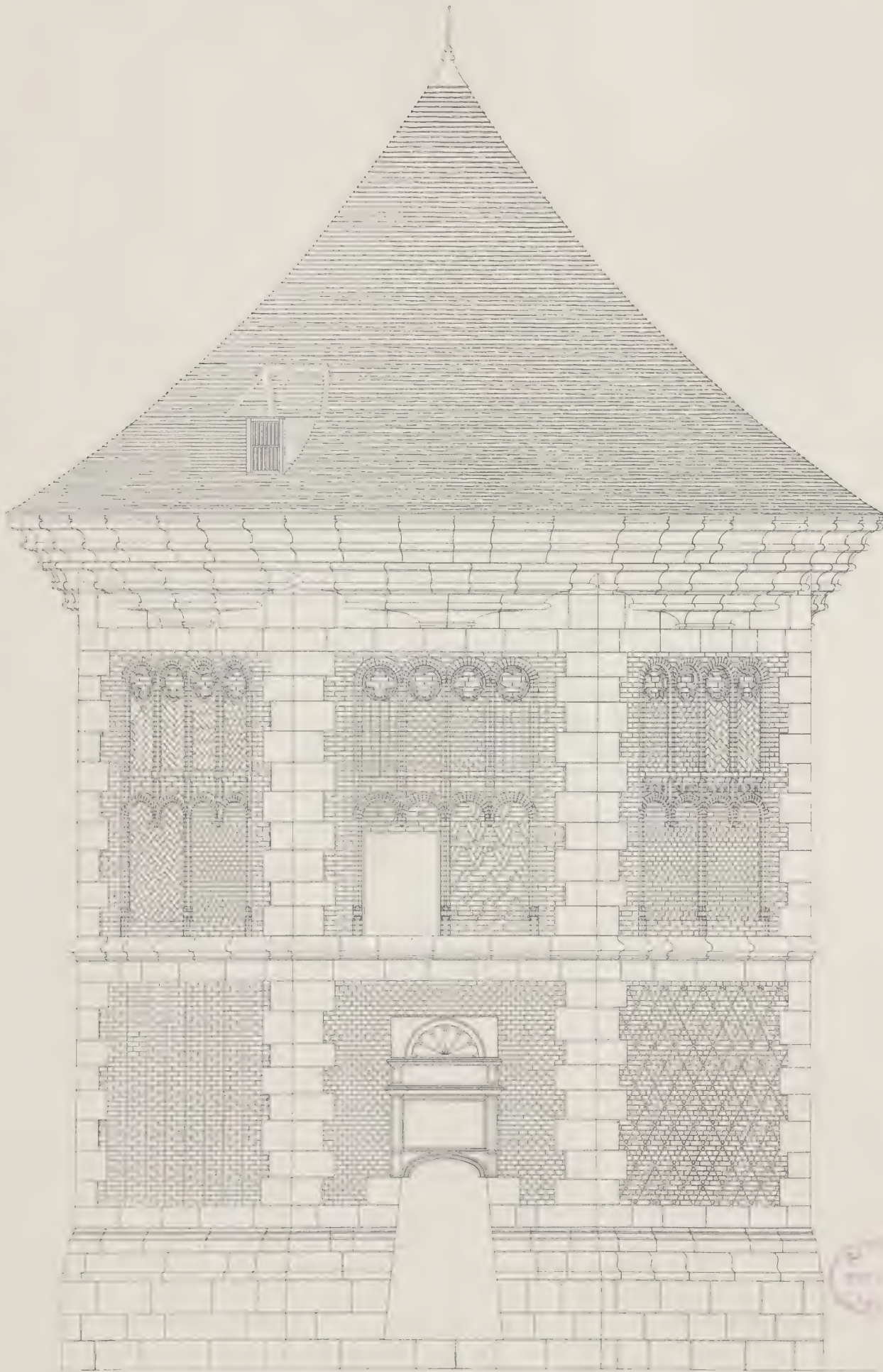
The carved work of the Gothic period could be carried as far as the French carried it only in a country provided with such stone as nearly every quarry in France supplies. But light-colored stones in small blocks can be had almost everywhere, and so can clay; and the use of these two materials in conjunction here shown in the small châteaux is full of serviceable suggestion.

MUNICIPAL BUILDING LAWS.

WHILE in nearly all our large American cities we are passing through a period of unrest and dissatisfaction, seeking to change the legal possibilities of building construction, it is a little consolation to know that in Paris, the oldest and most architectural of the European capitals, the same questions are being agitated. The new construction with which we are so familiar has not yet spread to Europe. Possibly it may never do so, and yet we find that questions of limitations in height are being constantly discussed in Paris. The world goes very slowly on the banks of the Seine and, perhaps, before our ten-year-old steel construction can make its way to foreign shores we may have seen fit to give it up here and revert to a more strictly masonry construction for our large buildings. That is one of the unsolved problems of the future, and in the mean time we can only regret that our sense of personal rights and limitations of corporate jurisdiction do not permit us here, as in Paris, to insist upon at least the appearance of uniformity in our streets.



HOTEL DE VILLE, AT LORRIS.



COLOMBIER AT BOOS, FRANCE. WILL S. ALDRICH, DEL.

Fire-proofing.

THE McCORMICK STORES AT CHICAGO COMPLETED.

IN THE BRICKBUILDER for December, 1899, an illustration was given from a photograph of the most northerly of the three wholesale stores lately erected for Stanley R. McCormick, on Michigan Avenue, Chicago, showing it in course of erection. The object was to show how a store front is treated in such a manner that there is an intimate correspondence between the skeleton steel structure, the fire-proof protection of the same, and the external covering, from all three of which the design is evolved. This being so, it was also stated that this building is an actual demonstration of the commercial value of art as applied to a purely business building. The tenants who occupy it pay as an annual rent a certain percentage on the cost of the land and building. This cost was increased by the employment of Louis H. Sullivan to design the front in addition to the services of the firm of Holabird & Roche, who designed and constructed the three stores, all of which are rented at the same percentage on the cost of each.

We are now able to present an illustration of the fronts of the three stores completed, two of which are the design of Holabird & Roche, though their architectural services covered all three except the one front designed by Mr. Sullivan. We also give a complete constructional and detail drawing of the front of the middle store, the street numbers of which are 132 and 134, which is in three bays and seven stories high; while 135 and 136 is in two bays and of the same design, though only six stories high. It will be seen that there is no difference between the artistic treatment of Mr. Sullivan's front and those of Holabird & Roche except in details. Mr. Sullivan's front is nearly white terra-cotta, while the other two are built of red brick and red terra-cotta. The treatment of the first-story windows is practically the same, the visible supporting fire-proofed columns being seen through the glass. In Mr. Sullivan's the first story is plated with ornamental cast iron.

In the others the finish is brick and terra-cotta. All the party walls are of steel skeleton construction, the columns and floor girts being first covered with terra-cotta fire-proofing, and again covered with 4 ins. of brick, which is bonded in with the 13 in. brick panels which close the openings. These panels can be removed in any place without affecting the construction, so that any two floors or the whole can be thrown into one building. The girders run across the buildings from north to south, and the floor beams run fore and aft, the front and rear girders being located in the front and rear walls. The dimensions of the buildings on the ground are as follows: 135 and 136, 44 by 160 ft.; 132, 133, 134, 62 by 160 ft.; and 129, 130, 131 (the northerly one), 62 by 160 ft.; 135 and 136 is 88 ft. high; 132, 133, 134, 101 ft.; and 129, 130, 131 is 112 ft. high. The adjoining building on the north

is the Chicago Athletic Club, designed by Henry Ives Cobb. They stand opposite to that part of the Lake Front Park that has not yet been assigned to any purpose. Designs are now being made by members of the Chicago Architectural Club in competition for the annual gold, silver, and bronze medals of the Illinois Chapter of the American Institute of Architects, for a new City Hall, to be located opposite to these stores. The Chapter has volunteered to rename that part of Michigan Avenue from Randolph

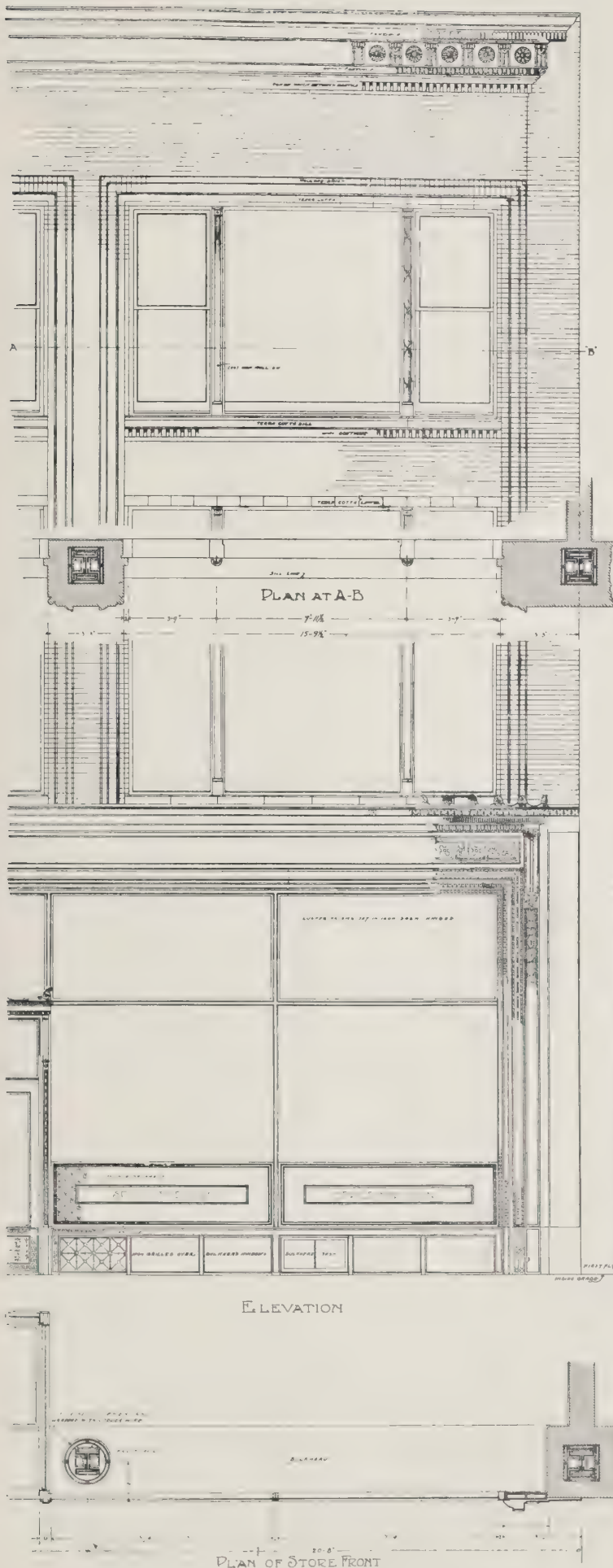


THE McCORMICK STORES, MICHIGAN AVENUE, CHICAGO.

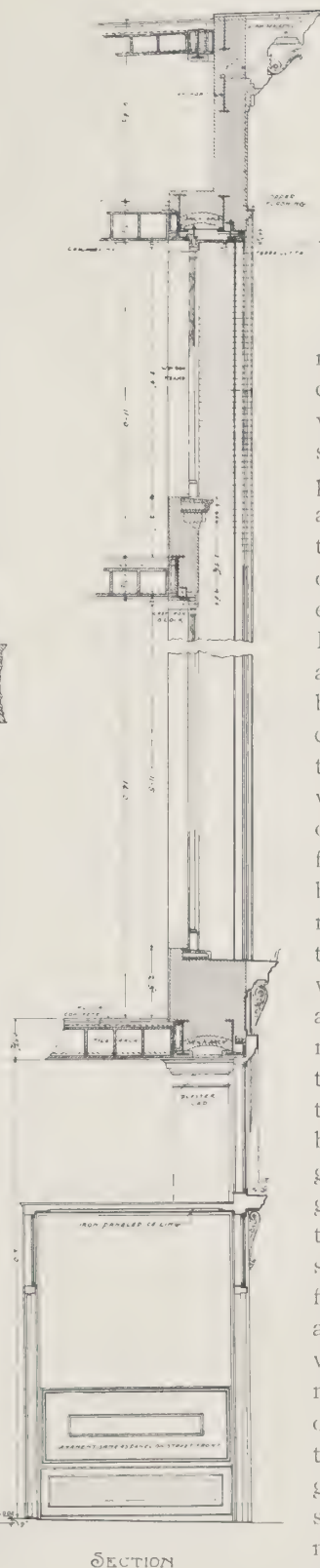
Street to Jackson Boulevard, which was not put in charge of the South Park Commissioners, as the "Municipal Court"; and if its dream is ever fulfilled by the erection of the municipal buildings on the east side of the court, forming a group with the Art Institute and the Public Library, the buildings here illustrated will be no insignificant feature in it. On the west side, the vacant spaces and those covered with temporary buildings, and the magnificent building site at the North End, now occupied by a cigar factory, will be the most splendid locations for private buildings in the whole city, if this plan should ever be carried out. The public buildings will set back from 50 to 80 ft., as the Art Institute does, leaving broad esplanades in front with excellent positions for statuary, and opportunity for a comprehensive artistic treatment for the approaches to a group of municipal buildings.

TOWNSEND BUILDING
FIRE.

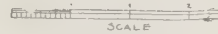
WE are frequently called upon to chronicle the results of fires in fire-proof buildings, and although the expression seems an anomaly it is one which is readily appreciated by those who are familiar with the developments and application of American fire-proofing methods. And we have yet to chronicle an instance wherein fire-proofing, if properly designed and properly applied, failed to accomplish all that could reasonably be expected of it. The recent fire in the eleventh story of the Townsend Building, corner of 25th Street and Broadway, New York City, built by Mr. C. L. W. Eidlitz, is a case in point, and adds another to the practical demonstrations which we have had of late years of the claim that with first-class fire-proof construction a fire can be practically confined to a single room without damage to the structural portions of a building, provided these structural portions are properly protected. We cannot properly fire-proof either the tenants or the contents of even the most carefully constructed building, and these will always give trouble and enable a conflagration to spread to a certain extent, as was the case in the Townsend Building. But though the fire was quite severe and was allowed to get a considerable headway before it could be checked, nevertheless, with the exception of the woodwork and certain partitions, the standing finish and glass, and certain damages by smoke and water in the rooms immediately adjoining, no other harm was caused to the interior of the building. The fire-proofing around the columns, nearly all the fire-proof partitions, also the arches of the floor above and the floor beams themselves, were not apparently damaged a particle, and will not even require to be replastered, while the total damage to the building is estimated at only \$4,000. It is a satisfaction to appreciate that our American methods of protection against fire can be depended upon to check the spread of a conflagration and to at least greatly minimize any possible danger to the structure itself.



DETAIL OF FRONT, MCCORMICK BUILDING, CHICAGO.
Holabird & Roche, Architects.



SECTION



Selected Miscellany.

NOTES FROM NEW YORK.

The general condition of business in this city is good. In regard to building operations, there will be little activity this spring, unless the high prices of building



HOUSE, EUCLID AVENUE, CLEVELAND, OHIO.
Granger & Meade, Architects.

materials take a tumble. There are a number of large contracts which are being held up on this account, and unless conditions change before the country becomes engaged in the turmoil of a presidential election there is small hope of getting this work under way before another year.

The Orange, N. J., Library competition, mentioned in the January BRICKBUILDER, and which was not awarded to any one of the thirty competitors, has been finally given to McKim, Mead & White. If this had been done in the first place there would have been no complaint, and thirty architects would have been saved much time, money, and trouble.

Just a few more words in regard to competitions. Architects are not only invited and urged to enter into competition for large and important buildings, but are act-



HOUSE, EUCLID HEIGHTS, CLEVELAND, OHIO.
Alfred Hoyt Granger, Architect.

ually being asked to compete for the privilege of making alterations and additions to existing buildings. According to the "Record and Guide," the Long Island College Hospital is to build an extension, and four prominent architects have been asked to submit plans, although one of them planned a successful addition to the building in 1897.

An important murder trial was delayed by a juror's illness, due to the draughts of a badly built court house, which cost the city \$2,000,000 and which has been completed only five years. The judge says that he is made so stiff and sore by the draughts as to be scarcely able to get out of his chair at the end of a day's session, and that it is almost impossible to keep twelve jurymen together for a number of weeks without sickness being caused among them by the cold and bad ventilation.

The contract for the construction of the underground railroad has been awarded. The cost will be \$35,000,000. It is predicted that the city will make rapid growth north of the Harlem River, and that property values will increase more than the amount for which the city obligates itself, and before the bonds for the whole



HOUSE, EUCLID AVENUE, CLEVELAND, OHIO.
Granger & Meade, Architects.

sum are called for. Then, too, an army of workingmen, estimated at from ten to fifteen thousand, will be employed in the construction of the road, and permanent positions for about three thousand will be created. The road will extend from the City Hall to Kingsbridge, with a branch in the Borough of the Bronx. Work is to be commenced at once.

The revised plans of architect John R. Thomas for the interior decorations and finish of the Hall of Records have been approved by the board of estimate, and a bond issue of \$2,250,000 has been authorized for their completion.

Three attractive new office buildings are well under way on lower Broadway. They are by architects Clinton & Russell, Bruce Price, and Cass Gilbert. In the two latter the fronts will be mainly of brick. In Mr. Price's building the combination is buff and red brick, the buff

color predominating and red brick being used as alternating quoins in the jambs and voussoirs over openings. In Mr. Gilbert's building the main wall is built of a very pretty red "rain-drop" brick, the pilasters at the top being faced with green brick, and the effect is very attractive and not so startling as one might imagine.

NOTES FROM CHICAGO.

Under the supervision of architect Frank B. Abbott,



NUNUPTON COURT, HEREFORDSHIRE, ENGLAND.

there has recently been completed an interesting piece of foundation work, which is to carry the walls of an eight-story light manufacturing building on a lot 100 by 150 ft. On one corner of the lot there is an old three-story brick building, the owner of which refused to build party walls. In order to avoid injury to the old walls while driving piles for the new structure, they were supported on heavy steel beams resting on bearings 10 ft. away from the trenches in which the piles were driven, and a trench was dug 6 ft. below the old basement to eliminate vibration. Although the outer row of piles was driven within a few inches of the old walls, the



UPTON COURT, HEREFORDSHIRE, ENGLAND.

maximum displacement of them was but one quarter of an inch.

One of our aldermen has prepared an ordinance limiting the height of apartment houses to four stories, but there is little likelihood that any such building regulation will ever be adopted. For a fact, the most serious fires in flat buildings have occurred in the three or four story type, which the law permits to be built of cheap and inflammable construction, after requiring brick exterior



DOUBLE HOUSE, GERMANTOWN, PA.

David Knickerbocker Boyd, Lawrence Visscher Boyd, Associate Architects



DOUBLE HOUSE, GERMANTOWN, PA.

David Knickerbocker Boyd, Lawrence Visscher Boyd, Associate Architects.

walls and fire-proof light shafts. What we need is a better standard of quality in buildings of this class. Lower rates of insurance, increased durability, insulation from sound, etc., ought to justify fire-proof methods of construction, even though there be a small increase in rent rates.

At a recent meeting of the local Chapter A. I. A., Mr. Peter B. Wight read selections from Tolstoi's "What Is Art?" The paper was followed by a general discussion.

At the Architectural Club, on January 15, Mr. Joseph Twyman lectured on "The Psychology of Textile Materials," and exhibited some rare imported tapestries. On January 22, Mr. Frank Garden, assisted by Mr. George Dean, gave an account of his experience in

the Klondike, in connection with which he showed some excellent lantern slides. January 29, "Bohemian Night," eight of the members of the club as hosts provided a unique and enjoyable "Faust" program, in which a "Faust" supper, "Faust" costumes, and "Faust" music were enjoyable and successful features.

Prof. N. Clifford Ricker, president of State Board of Examiners of Architects, and Peter B. Wight, secretary and treasurer, were reelected at the annual meeting on January 12.

Among the propositions brought before the recent annual meeting of the National Building Trades Council at Milwaukee, was one providing for the placing of a union label on all union-built structures; no action was taken, however.

Wilson & Marshall are the architects for the new Illinois Theatre, to be built on Jackson Boulevard on the site of the old Armory.

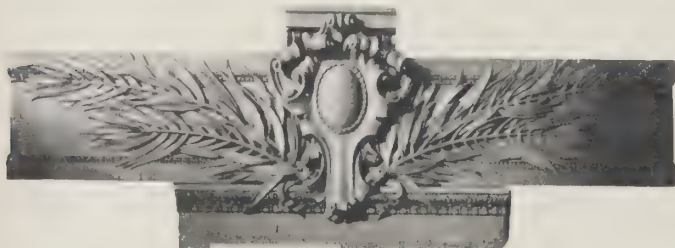
The labor situation, with respect to the building trades, has at last come to a crisis. Having grown weary of the studied delay on the part of the Building Trades Council in taking action on proposed arbitration measures, and other urgent questions demanding an early settlement, the Building Contractors Council has fixed the conditions and the rates of wages to which all employes must submit. Similar action was taken soon after by the largest firms of general contractors in the city who are not members of the Building Contractors Council. The issue has been squarely made between the opposing forces, and a struggle without precedent in the stormy history of local labor troubles is believed to be at hand. The contractors have given the mayor warning that the city will be sued for damages to property caused by the strikers. In the mean time the building investor and the architect will be ground a little finer between these upper and nether millstones of capital and labor.

NOTES FROM ST. LOUIS.

Mr. Edward Garden, an old member of the St. Louis Architectural Club, recently returned from Alaska, gave an entertaining talk on his experience in that country, illustrating same with lantern slides.

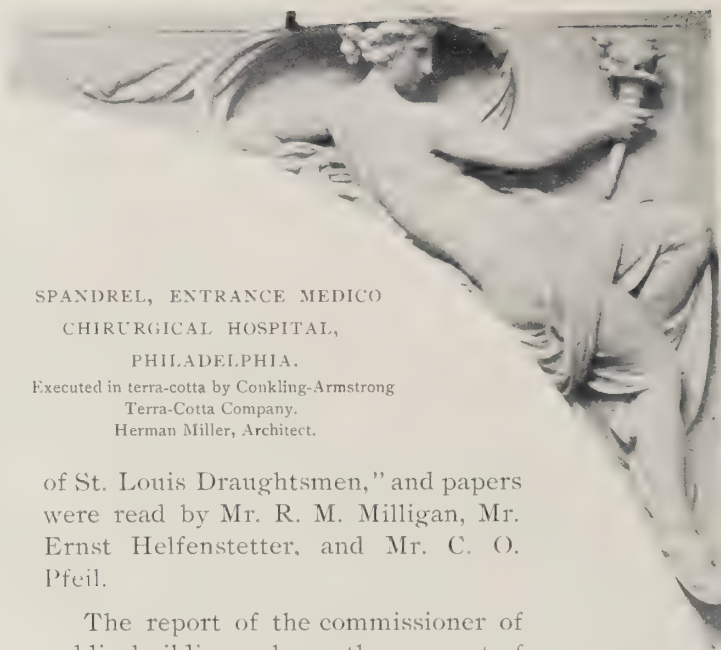
Mr. Porter White read before the club recently a paper on plain and ornamental plastering, and Mr. E. J. Russell is giving a series of talks on building superintendence at the regular monthly meetings.

The club gave a dinner on January 26, at which Mr. Edward Garden gave a talk on the "Social Engagements



PANEL BETWEEN WINDOWS, OFFICE BUILDING, NEW YORK CITY.

Executed in gray terra-cotta by the Excelsior Terra-Cotta Company.
Robert Maynicke, Architect.



SPANDREL, ENTRANCE MEDICO
CHIRURGICAL HOSPITAL,
PHILADELPHIA.

Executed in terra-cotta by Conkling-Armstrong
Terra-Cotta Company.
Herman Miller, Architect.

of St. Louis Draughtsmen," and papers were read by Mr. R. M. Milligan, Mr. Ernst Helfenstetter, and Mr. C. O. Pfeil.

The report of the commissioner of public buildings shows the amount of work done in the city during the year 1899 to be less than for the previous year, and of this an increased percentage of frame buildings. The permits issued in 1898 were 1,861, and the value of the buildings, \$7,429,729. During 1899 there were 1,539 permits issued for buildings, amounting to \$7,087,027.

The builders and labor organizations have selected an arbitration committee in order that differences may be settled without interfering with the work on World's Fair buildings.

A movement is on foot to make the present site of the Merchants Exchange the nucleus of a large wholesale district resembling the Cupples district.

The Cupples district is about to receive two new additions in the way of five-story buildings: one by Eames & Young, and the other by J. L. Wees.

Merchants and property owners in the vicinity of the Union Market have become aroused over the migration of a number of substantial firms from that locality, the cause of which they attribute to the dilapidated condition of the market. An effort is being made to raise \$100,000 for its improvement. The market belongs to the city, but it is unable to put the property into good condition, and the citizens are going to take the matter in their own hands.

NOTES FROM PITTSBURGH.

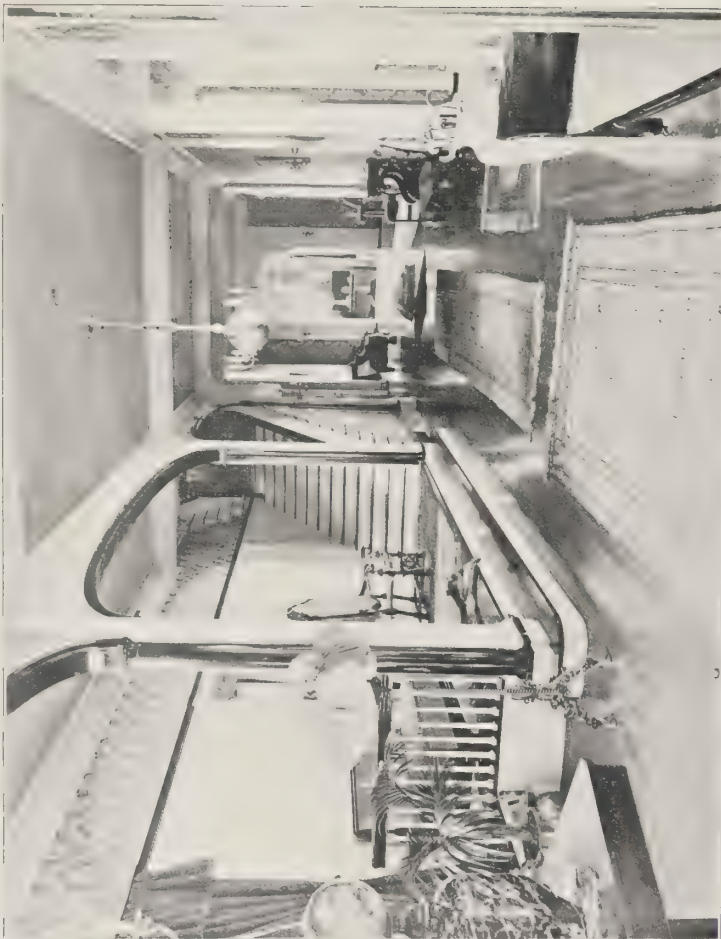
It is announced that all the land required for the new Union Station for the Pennsylvania systems has been obtained and that work will be commenced in a short time. D. H. Burnham, of Chicago, is the architect. At the same time all tracks are to be either raised or lowered and all grade crossings done away with. The improvements, it is estimated, will cost about \$13,000,000.

After considerable investigation two model tenements are to be built here, to cost about \$500,000.

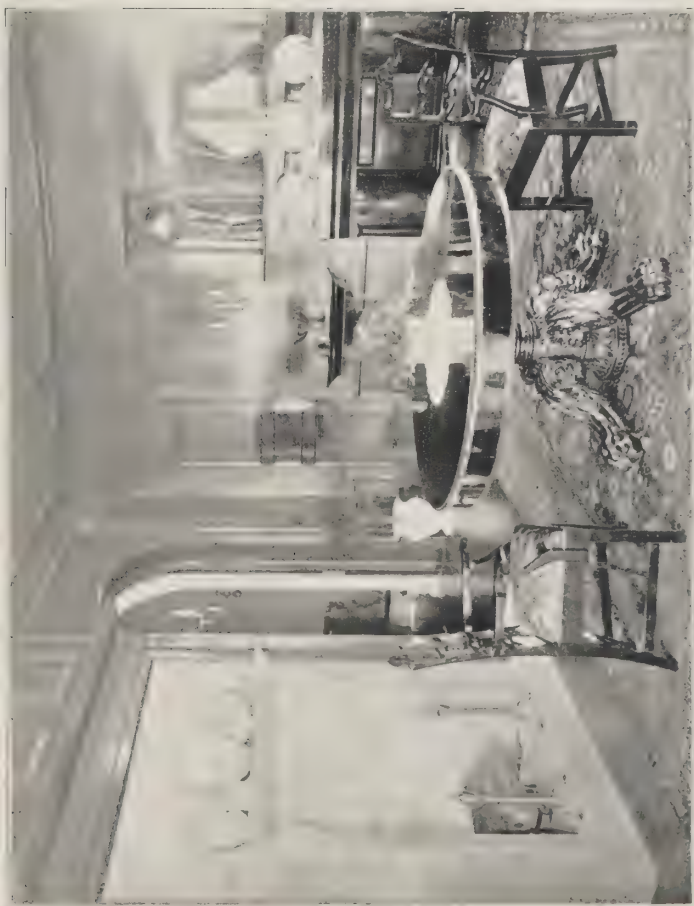
Though the city has issued bonds to raise money to buy the land needed for the proposed addition to the Carnegie Institute, nothing has yet been done toward securing this property, and the scheme will be dropped,



LIVING ROOM.



HALL.



DINING ROOM.



DRAWING ROOM.

HOUSE AT EUCLID HEIGHTS, CLEVELAND, OHIO.

Alfred H. Granger, Architect.



FINIAL, ENTRANCE HAMILTON BUILDING,
AKRON, OHIO.
Executed by Northwestern Terra-Cotta Company.
Meade & Garfield, Architects.

it is said, until the city fulfils its promises in this respect.

Alden & Harlow have been appointed architects of the new school building for Deaf and Dumb Asylum; the old building was recently burned. The new building will cost \$200,000.

The Westinghouse Company will soon commence work on their shops in Manchester, England. The plant will cost between five and six million dollars. Thomas Rodd is the architect and engineer.

The Pittsburgh Bank for Savings is to erect a new bank and office building.

If all the proposed office buildings should be built this spring, office rents will be apt to come down with a rush.

There is to be a competition for the Allegheny High School building, and it is supposed it will be conducted on the "good old plan"; and no doubt a large number of architects will enter, for unfortunately here we are not up to Boston's "Rules for Practice."

F. C. Rutan, W. J. East, and Mr. Stevens were the jury of award in the recent competition of the Architectural Club. The Club has made the improvement of that portion of the city between the Union Station, the B. & O. Station, and the "Point," or junction of the Allegheny and Monongahela Rivers the problem for the work of the year. The recent competition called for a general plan, showing points to be improved. The mentions were: 1st, P. A. Leisch; 2d, J. T. Comes; 3d, Harry Estep. The best ideas of these schemes have been adopted and the future work of the club is to be devoted to the special consideration of the following points: 1st, the improvement of streets and property in the neighborhood of the two stations and of the Allegheny County Court House; 2d, the approaches to all bridges; 3d, the improvement of the "Point" and the designing of new buildings for the Exposition Society; 4th, the laying out of a scheme of boulevards around the city and to connect these points; 5th, the removal of the "hump" on Fifth Avenue.

PERSONAL AND CLUB NOTES.

Arthur S. Meloy, Fred H. Parsons, and Frederick H. Beckwith, of Bridgeport, Conn., have formed a copartnership under the firm name of Meloy & Parsons, for the purpose of carrying on a general architectural and engineering business; office, 23 Post Office Arcade.

Louis Mullgardt and J. M. Dunham, architects, St. Louis, have dissolved copartnership. Mr. Mullgardt has opened an office at 415 Commercial Building.

The last regular monthly meeting and dinner of the Sketch Club, of New York, was held on Saturday evening, February 3, at which resolutions as to the reorganization of the club were adopted unanimously.

The Chicago Architectural Club will hold its thirteenth annual exhibition at the Art Institute, Chicago, from Tuesday, March 20, to Monday, April 2.

The Washington Architectural Club's program for its regular meeting of February 3, consisted of a visit to the "Halls of the Ancients." An address was made by the curator, Franklin W. Smith, who is putting unflagging enthusiasm into the great undertaking of establishing "National Galleries of History and Art." The added interest in, and better appreciation of architecture which would be awakened in the public mind by such an institution as Mr. Smith contemplates, and of which the present "Halls of the Ancients" is but a forerunner, leads him to seek the support of the architectural fraternity.

THE USE OF ENAMELED BRICK FOR EXTERIORS.

IN our December issue we took occasion to comment editorially on the growing tendency among architects to use enameled brick more extensively in the interior finish of all classes of buildings. Recently our attention has been called to a new field in which this material is being successfully employed. The smoke-laden atmosphere of many of our large cities has made it desirable, if not imperative, that some form of material shall be used in the construction of buildings, especially fronts, that shall withstand this contaminating nuisance, which adds not the rich color of age, nor by its deposit heightens the effect of lights and shades, but rather besmears design, and clots detail.

It is not necessary, and we venture to say not desirable, that the brick intended to combat this disfiguring agency shall have a highly glazed surface, but rather one that shall be sufficiently enameled to be positively non-absorbent. Such a brick because of its dull



PANEL.
Executed by New York Architectural Terra-Cotta Company.
Clinton & Russell, Architects.



CAPITAL, APARTMENT HOUSE, NEW YORK CITY.
Executed by the New Jersey Terra-Cotta Company.
M. Bernstein, Architect.

finish will not reflect the light, which is one of the chief objections to the use of enameled brick for exteriors, and furthermore its original attractiveness can be restored by an occasional bath.

Dull-finished enameled bricks, which meet in every respect these requirements, have recently been placed upon the market by the Tiffany Enameled Brick Co., of Chicago, and judged by the class of work in which they have been employed, and the testimonials from architects and owners, they have met with deserved success. Among the new buildings in which these bricks have been, or will be, used is a residence at Kansas City, of which S. R. Frink is the architect; a business block at Kansas City, Louis Curtiss, architect; a business block at Chicago, the owners of which, Geo. B. Carpenter & Co., write: "They make a handsome front, and the ease and cheapness with which they can be cleaned make them especially desirable for smoky cities"; a business block at Columbus, Ohio, C. A. Stribling & Co., architects; a business block at Chicago, D. E. Postle, architect. Regarding this building Mr. Postle says: "The cost of keeping the fronts clean has been normal, although the building stands where it is exposed to the various impurities, such as smoke and soot."

Perhaps the most important building, architecturally, for which these bricks have been specified is the new Church of Christ (Scientist) at Chicago, Hugh M. G. Garden, architect. Mr. Garden, in speaking of their adoption, says: "The conditions of the climate in Chicago and our proverbial sooty atmosphere make an imperative demand for non-absorbent materials for exteriors of buildings. After thorough investigation I adopted dull-finished enameled brick for the entire exterior of the new Third Church of Christ (Scientist) of this city, not only on account of its non-absorption of moisture and dirt, but because of its great beauty. The combination of this material with enameled terra-cotta opens to us great possibilities in exterior decoration. There are scarcely

any limits of form, texture, or color not to be reached by these materials."

MANUFACTURERS' CATALOGUES AND SAMPLES DESIRED.

THE following-named architects would be pleased to receive manufacturers' catalogues and samples: W. G. Pigueron, Hamilton Building, Park Avenue, corner 125th Street, New York, N. Y.; W. D. Teeple, Belvidere, Ill.; A. D. Clifford, 450 Livingston Street, Elizabeth, N. J.; Julius Wenig, 655 New York Avenue, Washington, D. C.; Barrett & Thomson, Raleigh, N. C.

CURRENT ITEMS OF INTEREST.

R. W. Allison, president of the Empire Fireproofing Company, has purchased the fire-clay plants and coal and clay mines formerly owned by the United States Fireclay Company and the Ohio Sewer Pipe Company, at Lisbon, Ohio. Associated with Mr. Allison in the purchase is Henry M. Keasbey, president of the Central Fireproofing Company, of New York, and also president of the Raritan Hollow and Porous Brick Company, of Keasbey, N. J. Messrs. Allison and Keasbey recently purchased the terracotta works at Osnaburg, near Canton, Ohio, and it is their intention to consolidate these with other plants which they are negotiating for. For this purpose a company is being organized under the laws of the State of New Jersey, which will have its headquarters in Pittsburgh.



CONSOL, INTERNATIONAL BANK BUILDING, NEW YORK CITY.

Executed in terra-cotta by the Atlantic Terra-Cotta Company.
Bruce Price, Architect.

The Columbus Brick and Terra-Cotta Company are supplying their gray Roman brick for an apartment house in New York City. George Keister, architect; their gray Norman brick for the seventeen-story office building for the Union Savings Bank and Trust Company, at Cincinnati, Ohio. D. H. Burnham



CAPITAL, HURON STREET THEATRE, CLEVELAND, OHIO.

Executed by the Indianapolis Terra-Cotta Company.
George J. Metzger, Architect.

& Co., architects; also gray bricks for residences at Dayton, Norwood, and Avondale, Ohio.

Charles Bacon, Boston agent for Sayre & Fisher Company, is supplying bricks for the following new contracts: Telephone Building, Boston, Peabody & Stearns, architects; Medical Library, Boston, Shaw & Hunnewell, architects; and four residences, Bay State Road, Boston.

The Atwood Faience Company, of Hartford, Conn., has changed its name to The Hartford Faience Company. There has been a change in the management, and new capital has been interested; and they are now in a better position than ever before to meet the demands for their line of manufacture, which includes terra-vitrae, dull finish tile, faience mantels, and special faience in borders, moldings, wainscotings, and bas-relief.

A well-known professor in one of our large colleges has recently advised the members of the architectural class to study closely the subject of burnt clay in all its branches, for the reason that he believes that burnt clay in its various forms is destined logically to become the leading building material of the future, in this country. As a starter, we would refer all those interested in the subject to the new catalogue issued by the American Clay Working Machinery Company, of Bucyrus, Ohio. In this elaborate work one may get a good idea of the initial methods by which a good building is produced, for if we accept as a truism the old saying that "fine feathers make fine birds," it must be admitted that well-made bricks play no small part in the appearance of a building. To follow this book from cover to cover is to learn that the employment of intricate and ponderous machinery, "built right and run right," is the means by which is brought to the hands of the architect and builder that quality of material by which they too may build right.

CONVENTION OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION, DETROIT.

THE National Brick Manufacturers' Association held its Fourteenth Annual Convention at Detroit, February 7 to 10. It was without doubt one of the most

interesting conventions held by the association, and the attendance was unusually large.

The members were welcomed to Detroit by the mayor of the city and the governor of the State, and everything possible was done by the local committee, of which Mr. F. B. Stevens acted as chairman, to provide for the wants of the members and their ladies.

Besides the usual number of technical papers which are of interest chiefly to the manufacturer, there were other topics discussed which would be of interest to those who are users of burnt clay products.

This association embraces in its membership many of the leading burnt

clay manufacturers of the country and there is evidently a growing sentiment among them that it is desirable to bring more prominently before these conventions the market end of their business, and we have been assured by Mr. Randall, the secretary, that it is his intention to invite one or more architects, and perhaps a builder, to submit papers, the nature of which shall bring into closer touch with one another the manufacturer and the user. We believe such a departure to be desirable and feasible, and that it would largely increase the interest in these annual conventions.

The newly elected president is Mr. W. D. Gates, of the American Terra-Cotta & Ceramic Company, of Chicago, who succeeded in office Mr. W. D. Richardson, of the Ohio Mining & Manufacturing Company, Shawnee, Ohio, both of whom are well and favorably known in the building world.



FIGURE FOR THE RITTENHOUSE APARTMENTS, PHILA., PA.
Executed in terra-cotta by the Perth Amboy Terra-Cotta Company.
Willis G. Hale, Architect.



CORBEL, MAIN ENTRANCE FEDERAL BUILDING, YOUNGSTOWN, OHIO.
Executed by the St. Louis Terra-Cotta Company
D. H. Burnham & Co., Architects.



REAR ELEVATION.



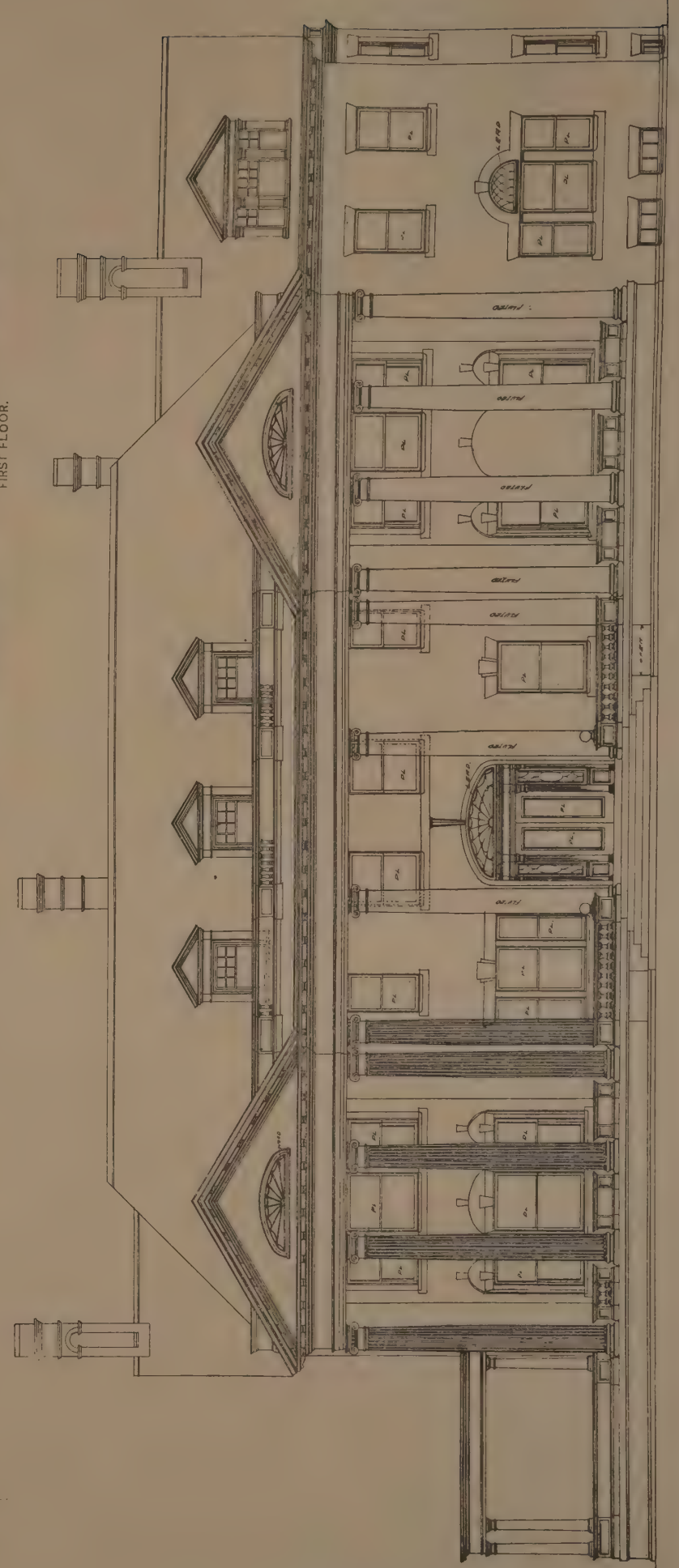
SIDE ELEVATION.



SECOND FLOOR.



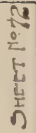
FIRST FLOOR.



FRONT ELEVATION.

HOUSE, EUCLID HEIGHTS, CLEVELAND, OHIO.
ALFRED HOYT GRANGER, ARCHITECT.





ELEVATION OF BUILDING "C."

ELEVATION OF BUILDING "D".

DETAILS MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

VOL. 9. NO. 2.

PLATES 12 and 13.



COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

PLATE 14.

COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.



RESIDENCE, EUCLID HEIGHTS, CLEVELAND, OHIO.
ALFRED HOYT GRANGER, ARCHITECT.





HOUSE, WESTMINSTER PLACE, ST. LOUIS, MO.
LOUIS MULLGARDT ARCHITECT.





RESIDENCE, EUCLID HEIGHTS, CLEVELAND, OHIO.
GRANGER & MEADE ARCHITECTS.





COURT YARD.

MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

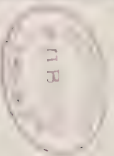




COURT YARD.

MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA PHILADELPHIA, PA.

COPE & STEWART, SON, FRANK MILES DAY & BROS., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

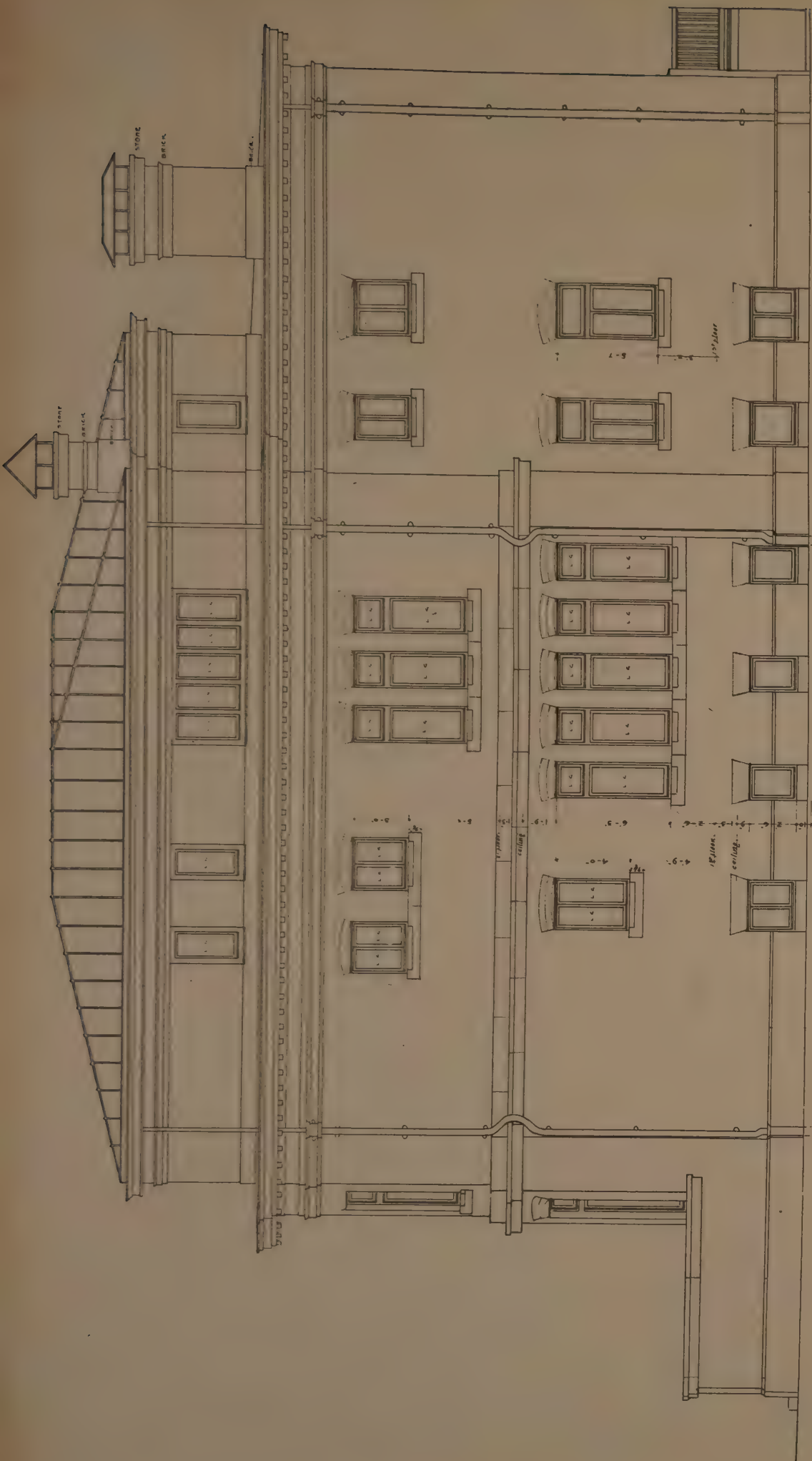




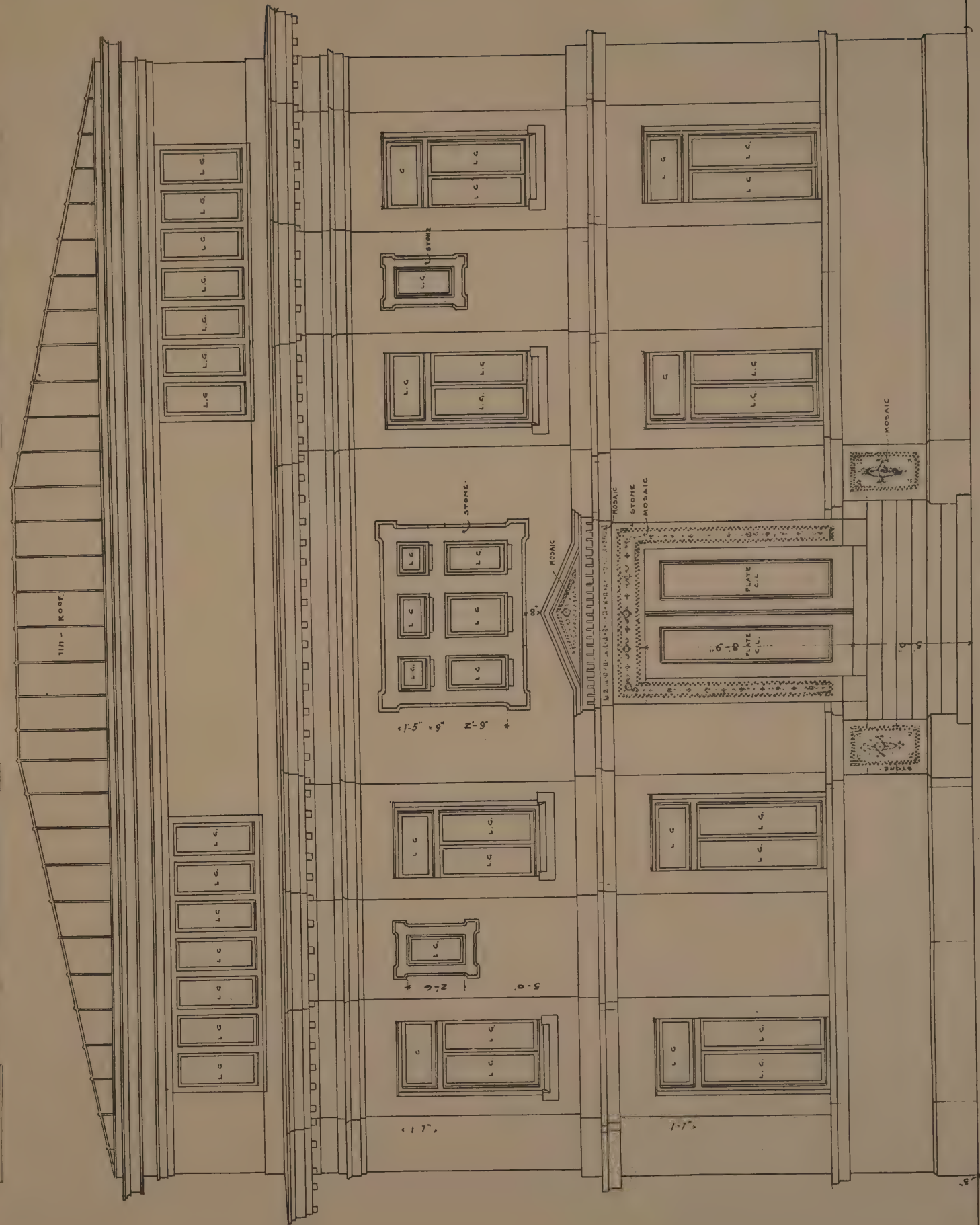
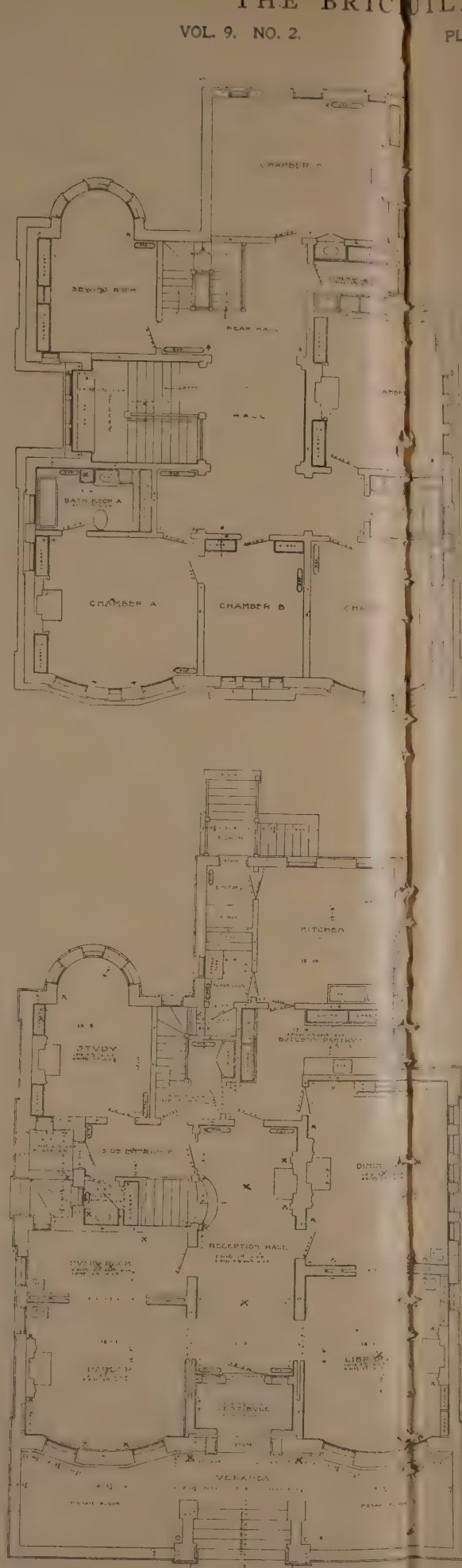
MAIN ENTRANCE.

MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
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SIDE ELEVATION.



FRONT ELEVATION.
HOUSE, WESTMINSTER PLACE, ST. LOUIS, MO.
LOUIS MULLGART, ARCHITECT.

THE BRICKBUILDER,
MARCH,
1900.



INTERIOR OF CHOIR, CHURCH OF SAN PIETRO, PERUGIA.

VOL. 9

NO. 3

THE

MARCH

1900

H. F. B.

THE BRICKBUILDER

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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Advertisements will be printed on cover pages only.

WE have in these columns several times suggested the possible desirability of minimizing the amount of steel to be used in a building, having in view the extreme liability to corrosion which this metal offers. We have read with much interest in the *London Builder* an account of the precautions taken in connection with the steel work of the Forth Bridge in Scotland, which included scraping, a coat of linseed oil, two coats of red lead, and two coats of oxide of iron paint. With all this care signs of rust constantly appear, and the lower parts of the bridge have to be re-cleaned and repainted once every year. It is reasonably open to question whether a material which is so readily corrodible is a suitable one for use in any structure intended to be permanent, especially when the steel structural parts are to be hidden entirely from inspection for repair in the center of a masonry wall.

IN a few cities of this world the natural advantages seem to be intelligently utilized, as in the Thames Embankment, London, the residential portions of the harbor at Cadiz, or the northerly portions of Naples. Boston, with all its magnificent park system, seems to be hopelessly behind in this respect. South Boston has a splendid outlook towards the harbor in several directions, but the shore line is practically abandoned to bathing houses and cheap places of amusement. Beacon Street, which still remains one of the best residential portions of the city, backs in the most contemptuous manner onto the magnificent prospect of the Charles

River and the Back Bay, and while there are a few houses which recognize the value of the outlook and put their best rooms towards the water, there does not seem to be any disposition to admit that the rear of the water side of Beacon Street is good for anything but stables and out-houses. The old poetic statement that “all nature is but art unknown to thee” applies with particular force to these portions of Boston, for the possibilities of natural environment could hardly be more thoroughly ignored.

A FEW years since the Beacon Boulevard was extended from Boston through a prosperous section of Brookline, and in the process of widening it lapped over onto what was a species of sink hole of unknown depth. The hole was filled in to an extent that to the casual observer presented the appearance of a promising building lot. Two or three years ago an enterprising speculative builder purchased the land and proceeded to erect thereon a row of very handsomely finished apartment houses, which were speedily rented and occupied, but almost as speedily emptied and absolutely vacated, to remain in that hopeless condition ever since. With a blind faith in the solid appearance of the earth, which seems to be a function of our esteemed jerry-builders, no apparent attempt was made to investigate the soil upon which the building was to rest, and the structure has been gradually settling ever since, at so varying rate, however, that the walls and lintels are cracked in all directions, and the town authorities have ordered the building taken down. It would be a comparatively simple matter for an educated structural engineer to underpin a building of this sort and make it absolutely secure. As one of our builders remarked in connection therewith, if a modern shipbuilder can construct a twenty-thousand-ton steel box which will float in perfect safety through the fiercest gales of the Atlantic, there ought to be no difficulty in making a proper bed on which this house could rest securely in the middle of the mud. Unfortunately in this case there are legal complications, so that no one quite dares to assume the risk of putting money into the fast-failing structure. Consequently we may have presently to record the entire collapse of the building. Such occurrences are very rare. We recall one instance in Brooklyn, where a house was built on a steep bank of clay overlying an inclined stratum of rock, with the result that when the water worked in between the clay and the rock, the bank and all slid out bodily into the street. Generally speaking, however, we load old Mother Earth with impunity almost anywhere, and with a blind sort of trust that somehow she will bear her burdens safely.

ARCHITECTURAL ROUTES IN EUROPE.

BY C. H. BLACKALL,
SECRETARY OF THE ROTCH TRAVELING SCHOLARSHIP.

THE Paris Exposition is a magnet which will undoubtedly draw many students of architecture to Europe this coming summer, and as Paris contains only a small portion of the treasures which are available to the American student, the architectural highways of Europe will be pretty apt to be more than usually crowded. While it is true that an intelligent student will pick up a lot of valuable ideas almost anywhere, it is a great help to one who contemplates travel to formulate his plans and lay down some definite program for his guidance. There is so much to be seen, it is so hard to make a wise selection on the spur of the moment, and so much more is accomplished by at least an elimination of the unnecessary, that having made a choice of the route, times, and seasons, the student who is to profit most by a brief trip to Europe will, generally speaking, be the one who adheres most closely to his preconceived program, knowing perfectly well what he wants to see, and making it his business to see and study only those things without overcrowding. The following suggestions are accordingly presented to the readers of THE BRICKBUILDER, with the hope that they may be of service to the younger men who will find it possible to include a trip abroad in this year's experiences.

A trip to Europe without Italy would be omitting all that is most valuable. The central and southern parts of Italy cannot be enjoyed during July and August. Consequently, in planning a trip, the time must be so disposed that these months will find the traveler in the more salubrious climates. Again, there are three types of possible trips through the architectural centers of Europe. The first embraces simply a general survey, merely skimming off the cream from the surface, including only the points of architectural interest of the very first importance; the second includes the chief points of the principal architectural countries, namely, Italy and France; and the third includes more of each, beside some acquaintance with Spain, the Netherlands, and England. The first trip could be accomplished by a month's sojourn abroad, not including the time of transit across the ocean, the second would require at least two months, and the third four. In order to make these suppositional trips more tangible, I will assume approximate dates and distinct lines of travel.

TRIP NO. I. — ONE MONTH ABROAD.

Leave New York or Boston April 14. Arrive at Naples, by the North German Lloyd Mediterranean service, the Anchor Line, or the Florio Rubatino, April 25. Spend one day in Naples, one day in Pompeii, arrive in Rome April 28. Spend one week in Rome, arrive at Florence May 5, stopping over between trains at Siena. Three days in Florence would give one a very fair idea of its treasures. Then would follow one day at Pisa, one day, including the time spent in traveling, at Genoa, and four days divided between Pavia, Milan, Bologna, Vicenza, arriving at Venice, say, May 16. Three days at Venice would have to answer, though it is little enough. That would bring us to Saturday, the 19th of

May. Monday morning, the 21st, we ought to be in Paris, where we could spend two days, leaving there on the afternoon of the 24th for London, stopping only long enough to take a hurried glimpse around the city, and taking a steamer at Liverpool on the 26th for America.

A wide-awake student will take in everything, but there are some things that he must be sure to see, and I would suggest the following for the various cities: Naples, the Museum. This ought to be studied pretty carefully within the time allotted. Pompeii is one vast storehouse, and I shall not particularize. In Rome, the six days at disposal can be arranged as follows: First day, hire a carriage for the day and drive to the Capitoline Hill and then down the Corso to St. Peter's, and back to S. M. del Popolo and out to Villa Borghese, back to the Piazza di Spagna and the Villa Medici, then to S. M. Maggiore, across to the Lateran, and around by the Forum to the medieval portion of the city, and across the Tiber and thence to Montorio, ending with a second visit to St. Peter's, none of these buildings being visited in detail the first day. The second day to be devoted entirely to the Roman remains, the Forum, the Capitoline Museums, the Coliseum, the Baths of Caracalla, and the Pantheon, with a visit in the afternoon to Tivoli. The third day devote to the early Christian and medieval churches, particularly San Clemente, San Paolo, San Lorenzo, S. M. in Trastevere and S. M. Maggiore. The fourth day devote entirely to St. Peter's and the Vatican. The fifth day devote entirely to the Renaissance palaces, especially the Massimi, the Borghese, the Cancellaria, the Farnese, and the Farnesina, together with the Renaissance churches, S. M. del Popolo, the Church of the Jesuits, S. M. Sopra Minerva, S. M. della Pace, and San Carlo a Catinari. The sixth day to be devoted exclusively to the art galleries.

At Siena the Town Hall and the Cathedral are the chief attractions. These can be seen in a very short time.

At Florence the three days at disposal can be expended by giving the first to the Bargello, Palazzo Vecchio, San Lorenzo, La Badia, and the Palazzo Sandolfini. The next day to the Palazzo Strozzi, the Cathedral, the Bigallo, the Baptistry, the Palazzo Riccardi in the morning, and Santa Croce, San Miniato, and the Boboli Gardens in the afternoon. The third day should be devoted to the picture galleries.

Pisa would offer only the Cathedral, Baptistry, and Leaning Tower. In Genoa study by all means the Andrea Doria Palace, the University, and the Villa Scassi. At Pavia it is worth while to spend a little time at the Cathedral and then take a running trip over the Certosa. At Milan study the Cathedral, the Victor Emanuel Gallery, San Satiro, and San Ambrogio. At Bologna see by all means the Palazzo Bevilacqua, Palazzo Fava, and San Petronio. At Vicenza there would be time only for the Basilica and the Palladio Theatre, but by watching trains there might be a chance to slip in a trip to Verona to take in the Loggia of the Gran' Guardia.

The way to see Venice in a hurry depends entirely upon one's temperament. Speaking for myself, out of three days I would spend one divided between San

Marco, Ai Frari, the Miracoli, the Scuolo San Marco, and the Salute. The second day would be devoted to San Marco and the Academy, and the third day would be given up entirely to floating around in a gondola.

Three days in Paris would include one at the Exposition, one at the Louvre, and one for a continuous drive all around town, including the Champs Élysées, Notre Dame, Hotel de Ville, the Grand Opera, the Luxembourg, the Pantheon, and the whole length of the main boulevards.

TRIP NO. 2. — TWO MONTHS ABROAD.

I have gone into considerable detail in outlining trip No. 1. Limits of space in this article would hardly permit of as much detail for No. 2, and I will simply indicate an approximate route and times.

Leave Boston or New York April 14, arrive at Naples April 24. Visit Naples and Pompeii as before, including a trip to Amalfi. Allow three days to Palermo and back, and then take train for Rome, arriving at that city on the 2d of May. Twelve days ought to be given to Rome, followed by a five days' trip to Florence, stopping off at Orvieto to see the Cathedral, at Assisi to see San Francesco, at Perugia, at Arezzo, and at Siena, arriving at Florence May 19. Allow five days this time for Florence, which is little enough, and allow two additional days for a trip to Prato, Pistoja, Lucca, and Pisa. On the 27th start for Venice, stopping at Bologna and Ferrara, arriving at Venice on the evening of the 29th. Five days is not too much for Venice. On the 4th of June start west on a trip to include Padua, Vicenza, Verona, Mantua, Cremona, Piacenza, Milan, Pavia, and Genoa. This would take up six days, leading us to the 10th. One day more at Genoa would bring us to June 11. Then go by Mont Cenis route to Geneva and thence to Paris, arriving at the latter city on the 13th. Three days in Paris would carry us to the evening of the 16th. Then make a circular trip including Chartres, Orleans, Blois, Le Mans, Vitré, Mont San Michel, Caen, Rouen, returning to Paris on the 21st. This would give us still two days to reach London and take a steamer from Liverpool on the 23d of June.

TRIP NO. 3. — FOUR MONTHS ABROAD.

Here, again, the detail is too much for insertion in this article, and I can lay out only the route.

Leave New York or Boston April 14, arrive at Gibraltar the 21st. Take a trip through Spain, including Malaga, Granada, Cordova, Toledo, Madrid, Burgos, Saragossa, and Barcelona. This can be done in fifteen days, which brings us to May 6. At Barcelona take steamer for Naples, following the same route as far as Genoa given in trip No. 2. This would finish Italy in seven weeks, bringing us to June 24. After this I should give a whole week to a short trip through Switzerland, starting *via* St. Gothard to Lucerne, over the Brünig Pass to Berne, and across to Geneva, which would bring us to the 1st of July, thence heading for Paris by way of Lyons, Le Puy, Clermont, Bourges, Tours, Blois, Orleans, and Chartres. The French capital would be reached in twelve days, or on, say, July 14. The following week up to July 21 would be devoted to Paris, besides two

days devoted respectively to Fontainebleau and Versailles, leaving Paris on the 24th of July for a trip through Normandy, including Le Mans, Vitré, San Michel, Avranches, Coutances, Bayeux, Caen, Lisieux, and Rouen, a trip of twelve days more, which will bring us to August 11. This trip could be followed by a week spread around between Amiens, Rheims, Brussels, Antwerp, The Hague, and Amsterdam, whence a steamer could be taken to London. This would still leave a week for England, which would have to be restricted to London, Winchester, Salisbury, Oxford, Lincoln, Chester, and Liverpool, taking the steamer on the 25th.

An excellent preparation for any one of these combinations is a diligent study of Baedeker, with constant reference to Professor Hamlin's or Mr. Russell Sturgis's histories of European architecture. Mother wit and a determination to make the most of every moment will be great guides. The cities enumerated in any one of these trips could receive serious study during several years without by any means exhausting the subject, and the student who is undertaking to obtain the most he can in the least time must exercise the most rigid self-restraint. In trip No. 1 there would be no time for sketching. An excellent substitute and perhaps in some ways an even better plan than sketching is to buy photographs plentifully. These are cheap all over Europe and enable one to collect the odds and ends of his observation in a very satisfactory manner. It is well, also, to buy photographs in advance if possible, so as to be prepared a little for what is coming, and while in Rome, if the student can get access in one of the libraries to Letarouilly, it helps a great deal to study the buildings in print form first, and one will save a great deal of time and see much more intelligently by knowing what is before him.

In regard to expense, the most satisfactory way on the whole, if one has the money to stand it, is to buy Cook's hotel coupon tickets. This means an expenditure for board and lodging of at least \$2.50 a day. On the other hand, if one is so disposed, by a little time spent in seeking out, confining the search entirely to the hotels and restaurants mentioned in Baedeker, one need not pay over two francs and a half per day for lodging in Italy, or three francs in France, nor more than five francs per day for food in Italy, and six francs in France. In Spain good accommodation can usually be had, if one is resolved to pay no more, at prices ranging from \$1.00 to \$1.25 per day for meals and lodging. In regard to traveling expenses, the railroad fares for the first trip would cost about \$42, for the second trip \$60, and for the third trip \$110. If the student intends to travel second class, add 40 per cent. to these prices, or if first class, double them. Then for museum fees, incidentals, etc., there ought to be an allowance of a dollar a day. This would bring the minimum approximate cost for the first trip, exclusive of steamer passage, to \$125, for the second trip \$225, and for the third trip \$430.

Of course, any attempts to outline routes of travel in this manner are extremely general and would not answer for all temperaments nor for all circumstances, but they can at least suggest the manner in which the student can intelligently plan beforehand and be able to economize both money, time, and energy.

Minor Brickwork of the Apennines.

II. Umbria.

BY WALTER H. KILHAM.

THERE is a certain softness in the Umbrian landscape which seems to reflect itself in the traits of the inhabitants. There is an absence of the rough intonations in their speech, a peculiar drawl enters into their pronunciation, and the gentle countenances of Perugin's saints and madonnas are often reproduced among the natives of the present generations. This peaceful atmosphere seemed especially striking to us as we descended from the train at Foligno after a half-day's ride from Ancona through the wild ravines and gorges of the Apennines, and the impression was deepened by the obliging attitude of the station master, who agreed, for a consideration, to hold the north-bound accommodation train, due in an hour, if we did not return in time from a hasty trip about the streets of the town. Judging from such inspection as I was able to give, Foligno deserves a longer visit. There are several Renaissance buildings of the first order, — one very good, — the Palazzo Nuti, by Baccio d'Agnolo, and among the examples of good brickwork was the arched passage at the side of the cathedral with its delicately decorated window and archivolt.

It was the twenty-fifth of February, when, after a short run from Foligno, we slowly climbed the winding road which leads from the station up to the gate of Assisi. Although the fields were still dry and brown, the breath of spring was in the air, and the afternoon haze which hung over the sunny valley of the Tiber was mingled with the scent of burning leaves and of the freshly up-turned earth. The gray-green olive trees mingled the tone of their foliage with that of the fields into that delicate, dusty brown color which is the prevailing note of an Italian winter landscape, scarcely contrasting the scenery itself with the domes of the great church of Santa Maria degli Angeli, which rises so majestically above the plain.

Assisi stretches its brown length along the slope of a promontory above the beautiful Umbrian valley, sunning itself in the lazy Italian atmosphere with scarcely a sign



GENERAL VIEW OF ASSISI.

of life either in its long, main street or in its winding and sloping lanes. At the extremity of the promontory the square tower of San Francesco marks the limit of the town to the west, while eastward the brown houses fuse again into the mountain side. The town, best known for the wonderful frescoes by Giotto and the strikingly cavernous interior of the church raised over the grave of St. Francis, is mostly built of a brown, local stone, used in such small pieces that the effect, except in color, is almost that of brickwork. Actual brickwork, except in isolated and unlooked-for instances, is not found to any



great extent, but when used at all it is most cleverly employed, as shown in the sketches of the little balustrade that encloses the Ramp leading from the ground to the first floor of an old building, and the simple cornice that crowns a corner house just inside the gate.

Like Siena, Assisi has an equipment of public fountains in style peculiar to itself. They are often placed in wide recesses in the walls along the streets, and are furnished with a row of water jets which spout horizontally into a long trough. These, with the abundance of other architectural "properties," which fill the winding, hilly streets and grass-grown piazzas, would well repay the visit of the searcher for the picturesque, aside from the artistic treasures of the great church of St. Francis, and the attractive natural surroundings which distinguish it even in a land of beautiful cities.



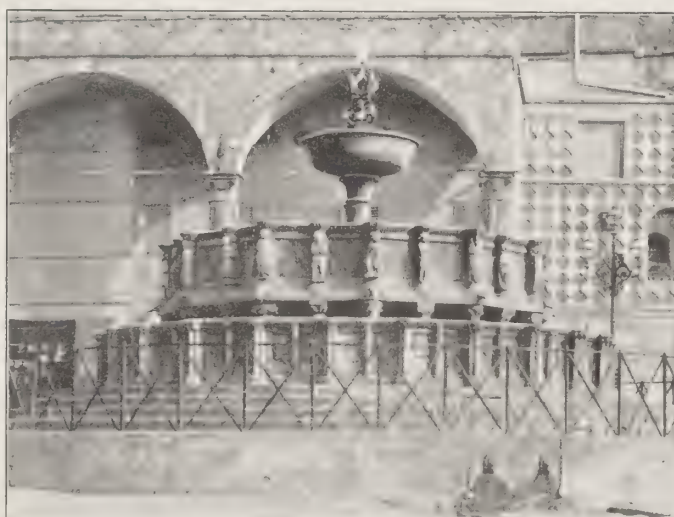
PALAZZO DEL CAPITANO DEL POPOLO, PERUGIA.

The towers of Perugia, ten miles distant, are plainly visible on their lofty hilltop, and the wide expanse of level valley land between offers tempting inducements to make the journey thither by highway rather than by rail, especially as the picturesque mills and bridge at the river may be seen, and the remarkable Etruscan tombs may be visited *en route*. These tombs are wonderfully well preserved, with their representations of ceiling beams cut out of solid rock and their terra-cotta reclining figures of family groups, all holding in their hands the coin necessary to pay for the ferrying across the dark river. Beyond the tombs the ground rises rapidly, and our little Italian horses, with the friendly aid of a donkey borrowed on the way, tow us bravely up the long ascent until the officers of the unusually suspicious *octroi* stop us under the old Roman archway and insist on rummaging our innocent valises for "*vino*."

Inside the gate Perugia impresses one as a peculiarly dark and gloomy town even for Italy. Besides the narrow streets and tall houses common to most Italian towns a building stone is used, which darkens almost to black and gives a smoky and dingy but most impressive local color to the old Umbrian city. While the porous local stone is the principal building material a good deal of brick-

work is used here and there, and sometimes in an entirely unexpected style. The old brick house which stands in the Via Pernice, on the slope of the hill below the Public Palace, is an example of this curious introduction of exterior mannerisms. Some of its details almost resemble the work often seen on private buildings in America. The alternating block decoration around the window arches suggest Venetian work, while the round-headed windows and heavy arch rings indicate an earlier period of architecture. The gateway gives entrance to a narrow court, barely 20 ft. in length, from one side of which a flight of steps built of brick, with a brick balustrade, ascends to a loggia. A zigzag molding similar to that in the Bargello at Florence follows the line of the treads and risers and supports the balustrade. A groined vault supports a balcony over these steps under which is the main entrance to the house. At the level of the upper floor there is a balcony carried on terra-cotta corbels and furnished with an iron railing. The roof is brought forward to form a cover for this balcony, the projecting rafter ends being held up by a long timber which crosses the entire width of the court.

The windows are round headed and the sill and arch



FOUNTAIN IN TOWN SQUARE OF PERUGIA.

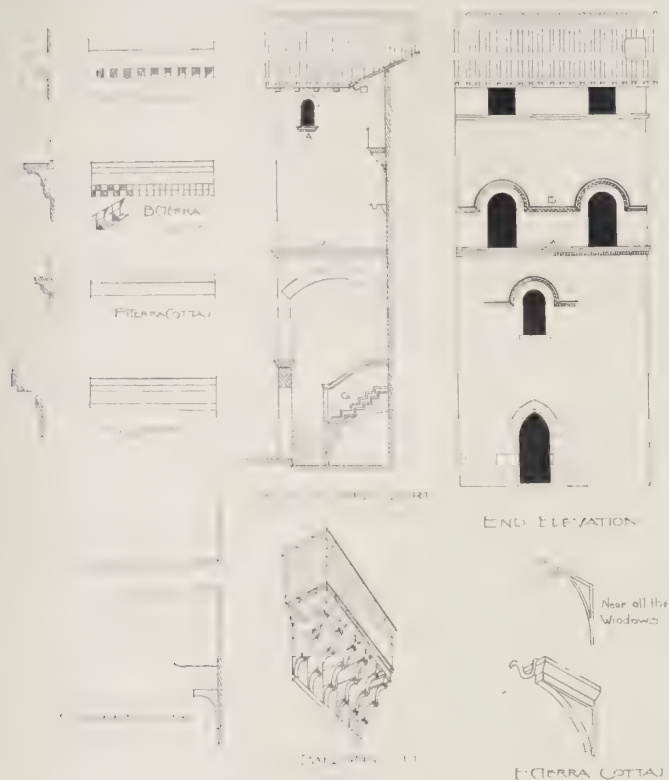
moldings are done in molded brick and terra-cotta. The curious little brick balcony which juts out under the top-most window in the smaller wing of the building is also supported on terra-cotta corbels of odd design. The building is now considerably out of repair, and gives little idea of its early splendor, reminding one strongly of the so-called house of Tristram the Hermit in Tours.

The dark and gloomy façade of the Public Palace watches over the little town square which has been the scene of so many desperate civic struggles. Many a time have the flagstones been littered with the corpses of Baglioni and Oddi, while the survivors have dragged themselves gasping to the cathedral steps. Over the arched portal on the great balcony, dangling from the claws of the two symbolic griffins, are some iron bars and chains, taken from the gates of Siena in some half-forgotten foray. The rough, brick walls of the cathedral, still waiting for the completion of their revetment of marble, contribute to a certain savagery of scene which even the beautiful Gothic outlines of Arnolfo's fountain



PALAZZO PUBBLICO, PERUGIA.

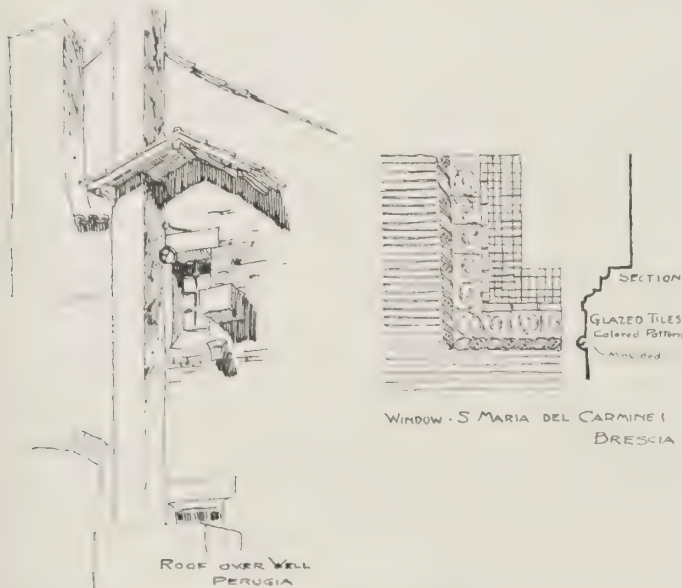
fail to dispel. The street architecture of Perugia most effectively reflects its stormy history, and to us it seems



DETAILS OF HOUSE IN PERUGIA, ITALY.

incredible that at the very time when the shouts of the chieftains and the clash of arms resounded in these narrow streets Perugino and his pupils were painting in some lofty studio their sweet-faced saints and madonnas and peaceful Umbrian landscapes.

Perugian architecture is not wholly given over, however, to these forbidding productions, and graceful doorways, balconies, and windows are found in many of the streets. Not far from the town square, in the Piazza Sopramura, rises the palace of the Capitano del Popolo with a splendid round-arched portal, a row of delicately detailed windows, and a charming Renaissance



balcony at one side with armorial bearings; while in the other direction is the beautiful Collegio del Cambio, or

Exchange, with its splendid decorations and woodwork. In intarsia work, wood carving, and choir-stall work, indeed, Perugia easily stands in the front rank, as will be seen by the accompanying illustration showing the interior of the Church of San Pietro.

The Corso Vanucci leads from the unpromising surroundings of the Public Palace to the garden of the Prefettura, from which, as from Assisi, a beautiful view is obtained over the valley of the Tiber as far as Foligno, Spello, and Trevi.

Many other examples of good brickwork are found in the mountain towns of the region between here and Rome. In the latter city itself, while vast quantities of bricks were used and re-used in the Middle Ages, the material does not appear to have been thought of as being beautiful in itself, and was only employed in the general



ELEVATION OF COURT FACADE.



PLAN OF COURT.

HOUSE IN PERUGIA, ITALY.

masses of the building, the ornamental work being done in stone or marble. The many-storied bell towers are well known, and the old Church of SS. Giovanni e Paolo on the Caelian hill is easily one of the most picturesque sights in the Eternal City, with the graceful colonnade of its apse rising above the damp and time-stained garden walls and massive arches at its base. At the same time the view is very typical of the appearance of the half-deserted southern quarters of Rome.

In comparing the work in central Italy with that in the northern towns a good many minor peculiarities of the work of the two sections will appear. One noticeable fact is that while the Renaissance cornices of the two cities are much alike in detail, those in Siena are covered by the far-projecting Tuscan eaves, supported on wooden-

rafter ends, while in Bologna this seldom occurs, the cornice itself forming the sky-line. Moreover, on the



DOORWAY OF CATHEDRAL, FOLIGNO.

Lombard plain cities were numerous and close together, and building stone was scarce. Naturally, brick and terra-cotta became the building materials par excellence, and the proximity of so many rival cities caused a rivalry in design, so that the terra-cotta and brick ornamentation is more varied, richer, and more prevalent than in central Italy, though it is not necessarily more refined. The Lombard cities are almost wholly constructed of brick, while Siena and Perugia are largely stone-built towns. It is customary to bestow considerable ornamentation on the window openings, the fashion varying in the differ-



APSE OF CHURCH OF SAINTS JOHN AND PAUL, ROME.

ent towns. In Bologna, for example, flat decorated pilasters are placed at the sides of the windows carrying the arched top, and a slender mullion in the form of a column divides the enclosed space into two portions with semicircular heads, while the tympanum is further enriched by disks or rosettes. This work is executed in red terra-cotta, usually of excellent workmanship. Another building in Bologna, the Casa Stagni, on the corner of the Via Rizzoli, lately remodeled, has been charmingly decorated in color in a way which revives the best traditions of the old Italian School. The frieze has a deep blue ground on which is painted a delicate Renaissance pattern in light tones. The corner balcony and window trims are done in white, with the scrolls in soft blues and



CASA STAGNI, BOLOGNA.
A. Sezanne, Architect.

reds. The whole idea almost makes one wish that building operations were more active in Italy so that the undoubted abilities of Italian architects might have better opportunities for development.

Many other minor variations of window decoration might be noticed, such as, for example, the bit from Brescia, where a band of glazed green pattern tiles enclosed by a rich rope molding surrounds the window openings. Venice has many examples of this style without the tiles. The arcaded sidewalks of Bologna also provide another opportunity for much decoration of capitals and archivolts.

In Siena, however, brick decoration is mostly confined to the cornices and some restrained ornament about the windows and doors, while the brickwork itself is employed in structural masses of such size and importance that it gains immensely in effect as a material.

Heating and Ventilating of School-houses.

BY R. C. CARPENTER.

THE necessity for ventilating schoolhouses and other public buildings is now admitted to such an extent that but few people maintain that some system of ventilation is not essential, and no argument in favor of good ventilation is necessary. Statistics are not wanting which show a very great improvement in the health of pupils attending such public schools as have an improved system of ventilation, which can be directly attributed to the system of ventilation in use. The object of this article is not, however, to argue the advantages of improved systems of ventilation, but is to present a description of some of the methods which have been actually employed and give suggestions for proportioning and constructing such systems. While it is of advantage to consider systems of warming and ventilation as inseparably connected in method of construction it should be remembered that it is entirely possible to construct them separately, and that until within a few years it has been customary to put in systems of heating entirely independent from those for ventilation.

Air Required: A study of the subject of ventilation will show that authorities differ greatly as to the amount of air which is required. Thus Tredgold in writing on this subject, in 1836, stated that 4 cu. ft. of air per minute was good ventilation for healthy people, but that the sick in hospitals would require 6 cu. ft. per minute. Morin a few years later recommended 7 to 8 cu. ft. per child in schools and 13 to 17 cu. ft. for each adult in public assemblies. At the same time, he recommended that workmen in ordinary workshops be supplied with 33 cu. ft. of air per minute, and that those working at unhealthy trades should be supplied with about 60 cu. ft. per minute. It will be noted that to accord with this requirement children are to have very much less supply of air than grown people. Authorities at the present time, I think without exception, consider that children require fully as much air as adults. There has been a tendency, in later years, to increase the requirements for air supply whenever opportunity would permit, as it is generally held that provided the air can be handled, the greater the amount supplied the better for the health. Economy and prudence, however, require a certain limit which has generally been fixed at 33 cu. ft. per minute, or 2,000 cu. ft. per hour for each person, and that amount is maintained the same whether the occupants be children or adults.

The requirement of 33 cu. ft. of air per minute is a reasonable one for most conditions, and as high as can consistently be urged at the present time. This amount can be considered for the time being as the standard of present practice. This amount may be thought excessive, especially when it is considered that the total amount of air actually required or used for breathing by each person rarely exceeds from one fourth to one half a cubic foot per minute. From this it follows that if the pure air from the atmosphere could be directly conveyed to the person who required it in such a manner that it would not be contaminated by the surrounding gases the amount mentioned as a standard for ventilation would certainly

be excessive. Practically it is impossible to introduce pure air into a room in such a manner that it will not diffuse with the air already present. From this it follows that no matter how much fresh air be supplied, each person will breathe some of the contaminated air which had previously been found in the room, so that the act of ventilation is to be considered as largely one of dilution of the air existing in the room. Such being the case it is then essential that the existing air be so diluted that no harm to the people who breathe it shall result. The air in inhabited rooms is usually contaminated by the products of respiration, which throw into the room watery vapor, organic matter, and a certain amount of carbon dioxide. The air is also contaminated by the burning of gas and by other forms of combustion. The products of respiration contain frequently a considerable number of bacteria, and these are probably the cause of more disease and suffering than are the other poisonous matters existing in the products of respiration. It is quite probable that the best argument for improved ventilation is found in the fact that the supply of large bodies of fresh air acts to reduce the amount of injurious bacteria present in a given amount of air respired, and also fortifies the system against the effect of such bacteria as do exist. Regardless of the amount which might be necessary to maintain the health of a child in the best condition, we will assume that 33 ft. per minute or 2,000 cu. ft. per hour is required for each child.

Distribution of Air: Practical ventilation requires not only the admission of a certain amount of air for each person, but it requires that this air should be uniformly distributed throughout the room, or at least that it shall be made uniformly accessible to all persons. It must be distributed without producing sensible currents or draughts, otherwise the good results which would follow from the improved ventilation may be more than neutralized by the exposures due to wind currents, which frequently cause colds and other forms of sickness.

Practically, then, the problems of ventilation require, first, an amount of air which is not less than 2,000 cu. ft. per pupil each hour, and second, the uniform distribution of the air supplied in such a manner as to produce no draughts and give the best ventilation.

Temperature: The problems of heating require the room to be kept at a temperature which practice and custom in this country demand shall be 70 degs. Fahr. It should be noted, however, that this temperature is merely the demand of habit, and that some other temperature considerably lower might be equally comfortable were the people accustomed to it. This statement is well attested by noting the habits of people in countries other than our own, as, for instance, in England and on the continent of Europe, where a temperature 5 to 8 degs. lower is considered comfortable. The relation that temperature bears to the health of the pupil is probably not definitely determined, but it is quite certain that sudden changes have a very serious effect on the health, and hence an additional requirement for heating should be that of maintaining an equable temperature, it being fully as uncomfortable and as unhealthy for the child to be overheated as to be underheated. In the problems of heating a room it is difficult to maintain all portions of the room at the same temperature; the heated and warm air

tends to rise to the top of the room because of its light weight, while the cooler and heavier air tends to remain at the bottom. This action carries the heat to a portion of the room where it is not required, leaving the inhabited part of the room at a lower temperature. In any system of heating the more nearly this tendency to overheat certain portions of the room and underheat others can be obviated the more successful is the system of heating.

Form of Rooms: The form and dimensions of the rooms may have much to do with the uniform diffusion, both of the heat and the air introduced for ventilation, and while general systems and general requirements may be discussed with propriety in the limits of this article, the conclusion should not be drawn that special methods might not give much better results under some conditions than those described. The difficulties of obtaining uniform diffusion of the heat and the air increase with the height of the room. It was formerly supposed that a high room, since it afforded large storage space for air, provided better ventilation than a low room. It is, however, a fact capable of proof by calculation that an immense amount of storage capacity is required for each person, provided no exterior air be admitted, and this amount is so great that little practical benefit is derived from such a storage capacity as could be provided in the upper part of a room. In other words, in order to produce and maintain good ventilation the actual amount of air required must be constantly supplied from an outside source. If the room is of moderate height, I mean by this having a height of from two to three times that of its occupant, the problems of ventilation and of heating are generally easier of solution than with higher rooms, and better results are obtained in practice.

Motion of Air: Air for ventilation can be moved in three ways: first, by heat applied directly to a flue for the purpose of warming the air in it, or by heat indirectly; second, by mechanical means, as, for instance, by blower, fan, etc.; third, by induced methods, as by jets of steam, etc., which we do not consider. In the hot-air furnace system of heating, the air is warmed directly by coming in contact with the heater, and the motion or circulation produced is caused by the difference in weight of the colder air on the outside of the building and the warmer air in the flues leading to the rooms. The higher the temperature of these flues the greater the delivery of air. It is often supposed that a heated flue provides an economical method of moving air; on the contrary, actual experiment and trial show it to be an exceedingly costly and inefficient method of applying heat. The air which is moved by heat has a velocity due to the difference of temperature between that in the flue and that outside. If the outside air is colder than that in the flue there is an upward draught in the flue; if, on the other hand, the reverse conditions exist there may be a downward draught in the flue, in which case the currents of air move in the opposite direction from that required. When no heat is required in the interior of the rooms a special fire must be maintained in the flues to keep them hot for ventilation purposes, or otherwise ventilation must be provided for by opening the windows and doors and admitting the outside air directly into the rooms. Doubtless good ventilation could sometimes be obtained by

admitting outside air freely into the rooms, provided it could be equally diffused, but it has been found that practically no ventilation is likely to be supplied unless it can be done by apparatus which does not require the attention of the teacher. The mind of the teacher being preoccupied with his work, he is likely to neglect ventilation or anything which does not produce absolute discomfort. For this reason it is not considered desirable to erect any system of ventilation which cannot be operated in all conditions of weather, and by a regular attendant whose special duties are such as to require him to keep the system in operation continually.

The velocity of air discharged from a heated ventilating flue in feet per second is computed quite accurately by the formula

$$v = 8 \sqrt{h(t' - t)} \\ 460 + t$$

in which h equals the height of the chimney or flue in feet, t' the temperature in the flue, and t the temperature of the outside air. The amount of air discharged will be found by multiplying the velocity of discharge, as computed from the above formula, by the area of the discharge flue; the amount so calculated will be reduced by friction in the pipe and other causes. Mr. Alfred Wolff considers that the safe discharge should only be taken as one half that given by the above calculations; my own experience would indicate that two thirds of this amount can usually be safely assumed for flues of 25 to 50 ft. in length, and such as are commonly used in the ventilation of school buildings. A better method, doubtless, would be to compute the size of flue required by the calculations as outlined above, and then to increase each dimension by two inches as an allowance for loss of head due to friction. For long flues an additional amount proportional to the square root of the length would need to be added to counterbalance extra frictional losses.

The following table shows the velocity in feet per minute which would be produced in the discharge from a flue for a difference of temperature and height as given. In making a practical application of this table the area in square feet of a flue can be determined by dividing the amount which must be discharged expressed in cubic feet per minute by the velocity as given in the table. The area so obtained is the theoretical area when no friction exists. To account for friction determine the dimensions of the required flue corresponding to this theoretical area and increase these dimensions by 2 ins. to obtain the actual size. As an illustration, suppose that the excess in temperature of the air discharged from a flue above that of external air is 50 degs., that the height of flue is 20 ft., and the corresponding velocity as given in the table is 684 ft.; suppose that it is required to discharge 6,000 cu. ft. of air per minute through this flue. The theoretical area must be $\frac{6000}{684}$, or 8.7 sq. ft. Its dimension in one direction is usually assumed thus: If we wish our flue to be about 4 ft. in one direction, its dimensions in the other direction would be found by dividing 8.7 by 4, which gives 2.18 ft., corresponding to 26.2 ins. The theoretical area would thus be 48 by 26.2 ins. I would add to these dimensions 2 ins., making the dimensions of the flue 50 by 28.2 ins. This flue would be found satisfactory provided the inlets were

properly proportioned to overcome loss, and of sufficient size to keep a moderate velocity, or one not exceeding 400 ft. per minute. In order to fulfil this condition in the above instance it will be necessary to make inlet openings with rounded forms and with an area nearly 50 per cent. greater than that of the flue.

TABLE SHOWING VELOCITY OF AIR
IN FEET PER MINUTE IN FLUES
(THEORETICAL).

Height of flue, feet.	Excess of temperature of discharged air from flue above that of external air, degrees Fahr.									
	5 degrees.	10 degrees.	15 degrees.	20 degrees.	25 degrees.	30 degrees.	50 degrees.	100 degrees.	150 degrees.	
1	48	68	84	96	108	118	152	216	266	
5	110	142	188	218	242	268	334	484	594	
10	154	216	266	306	342	376	484	684	838	
15	198	260	324	376	420	460	594	838	1028	
20	242	304	376	434	484	530	684	968	1186	
25	242	242	420	484	542	594	766	1082	1326	
30	266	376	460	530	594	650	838	1186	1452	
35	286	406	496	572	650	702	906	1280	1568	
40	306	434	530	612	702	750	968	1368	1670	
45	324	460	564	650	750	796	1028	1448	1778	
50	342	484	594	684	796	838	1082	1530	1874	
60	376	532	650	746	840	922	1198	1670	2012	
70	406	572	702	810	930	994	1286	1800	2230	
80	434	612	750	906	970	1060	1376	1930	2370	
90	440	648	796	920	1032	1128	1454	2054	2450	
100	486	684	840	970	1068	1198	1536	2160	2650	

The system of ventilation in which the air is moved by means of heat applied to a flue is frequently spoken of as *natural ventilation*, and while the writer can see little or no appropriateness in that term for want of a better name the system will be so denominated in this article.

Mechanical Ventilation: The principal system of *mechanical ventilation* is that in which air is moved by a centrifugal fan or blower; for this purpose two forms of fans are employed, one of which receives the air at one side and delivers at the opposite side, the principal motion of the air being parallel to the axis. This is termed a disk fan and is illustrated in the accompanying diagrams, Figs. 1 and 2. The disk fans are made either with plane or curved blades as shown. The other fan delivers air radially and from the ends of its vanes, and is usually known as a *centrifugal blower* or quite frequently as a *blower*. A form of blower wheel without casing as ordinarily used is shown in Fig. 3. The same principle of operation governs

both fans, the principal force which is used in moving the air being the centrifugal force generated in the rotation of the wheels; in the disk fan the air is received on one side and discharged on the other; in the blower fan the air is received at the center of the wheel and discharged at its circumference into a casing, as shown in Fig. 4. The disk fan on account of its peculiar form is only suited for use where little difference of pressure is required. It is valuable for moving a large volume of air at low velocity and is probably the best form for exhaust or suction fans, and may be used in improving the draught of a flue. The blower form of fan is better adapted to move air when a considerable difference of pressure is required, and hence is better suited for forcing air through ducts or pipes. It is the ordinary type used in school-house ventilation where the air necessarily must be transported some distance. It has been mentioned that the expense of ventilation by the heated flue is greater than that of ventilation with a fan. It is meant by this that more fuel is required. For instance, if coal be burned under a boiler so as to form steam, and if this steam be used in an engine, even of a poor class, and the power so derived be used to operate a blower, much more air will be moved per pound of fuel consumed than if the same coal had been burned directly in a flue so that the entire amount of heat had been used for moving air by making it warmer and lighter than the surrounding air. Large losses take place in operating a blower under the conditions mentioned, but these losses are many times less than those which take place when ventilation is produced by use of the heated flue. In other words, the mechanical system of ventilation is more efficient than the so-called natural system.

The mechanical system is, in fact, very many times more efficient than the natural system; the value of the fuel used, as explained above, in a mechanical system is from 70 to 194 times that used directly for draught in a chimney 10 ft. high, and from 7

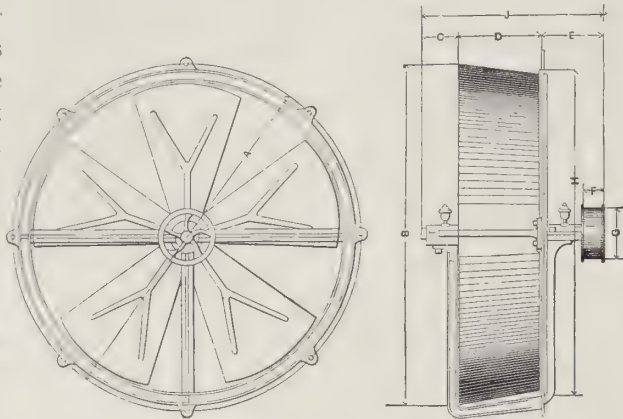


FIG. 1. DISK FAN WITH PLANE BLADES

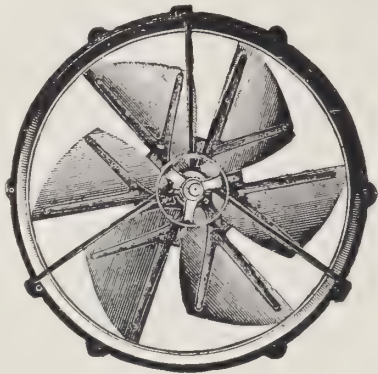


FIG. 2. DISK FAN WITH CURVED BLADES.

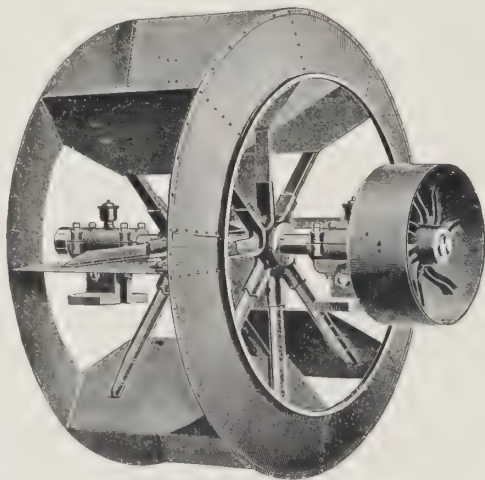


FIG. 3. FORM OF WHEEL FOR BLOWING FAN.

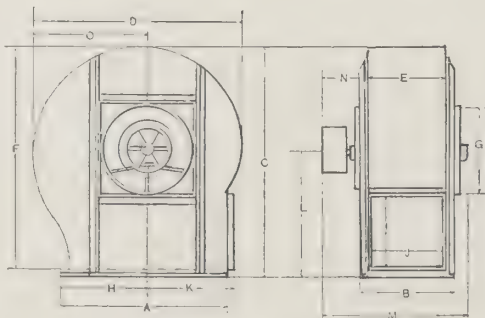


FIG. 4. DIAGRAM OF CASING OF BLOWER.
DISCHARGE OPENING CAN BE AT ANY
POINT.

to 20 times that used directly for draught in a chimney 100 ft. high. These differences are very great and show that it is never economical to burn fuel directly for the purpose of moving air in a heated flue.

It is usually the case that during the cold months the flues leading to and from the various rooms are maintained at a high temperature in the ordinary operation of warming the building, and under such conditions natural ventilation more or less effective can be obtained without extra cost. It is also true that during cold weather, and especially in large buildings, the steam which has done work in an engine may still be utilized

of the fan wheel moves 5,000 to 6,000 ft. per minute, and the diameter is taken sufficiently large to reduce the rotative speed to from 300 to 400 revolutions per minute, it being generally desirable to have the rotative speed not much in excess of 300 revolutions per minute, because at high speeds noise may be produced by the fan, which is likely to be transmitted to the rooms. Under the conditions of ordinary working, the capacity of a blowing fan can be found quite accurately by multiplying the cube of the diameter in feet by the number of revolutions, and multiplying this product by 0.4. Thus a fan wheel 4 ft. in diameter making 100 revolutions

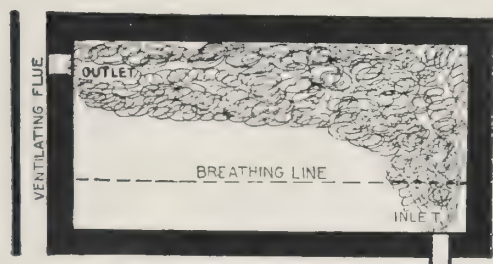


FIG. 5. AIR INTRODUCED AT BOTTOM, DISCHARGED AT TOP.

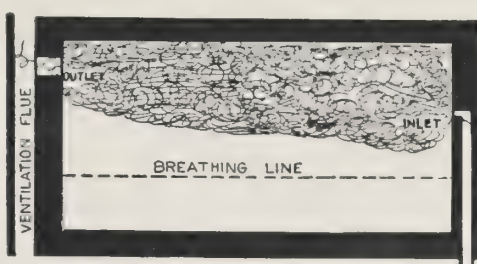


FIG. 6. AIR INTRODUCED ON SIDE, DISCHARGED AT TOP.

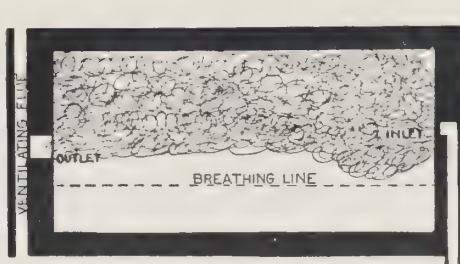


FIG. 7. AIR INTRODUCED ON SIDE, DISCHARGED ON OPPOSITE SIDE.

for heating purposes, and in that case no extra heat of practical amount would be required for the fan ventilating system. As a matter of comparison the two systems of ventilation would stand, so far as economy is concerned, on a practical equality during the cold season when the heat required for warming was applicable to aid in ventilation, but during the seasons when ventilation without heating is required economical advantages are many times in favor of the fan system of ventilation.

The force which is applicable for ventilating purposes with any natural system of ventilation is a feeble one; consequently with such systems the amount of ventilation is likely to be affected by adverse wind currents and by outside or inside temperatures, and hence it is uncertain in its action and likely to be unsatisfactory in character.

would deliver 0.4 of 6,400 ft., or 2,560 ft. A disk fan follows the same law, but the coefficients are not so accurately determined and vary greatly with the pressure. The horse power required to drive a fan delivering air under the conditions usual in schoolhouse ventilation is equal to the fifth power of the diameter of the fan in feet, multiplied by the cube of the number of revolutions per second, divided by 100,000; thus the power required to drive a fan 4 ft. in diameter at a speed of 240 revolutions per minute, or 4 revolutions per second, would be equal to the fifth power of four which is 1,024 multiplied by the cube of four which is 64, giving a product of 65,536. This divided by 100,000 gives as the power required to operate a fan 0.66 horse power. If the speed were 480 revolutions per minute, or 8 revolutions per

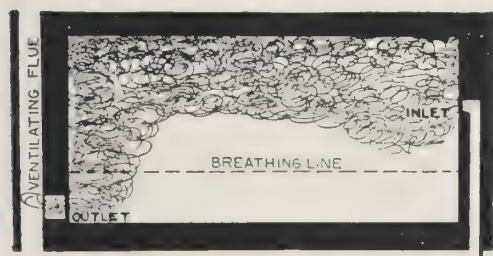


FIG. 8. AIR ADMITTED ON SIDE, DISCHARGED NEAR BOTTOM.

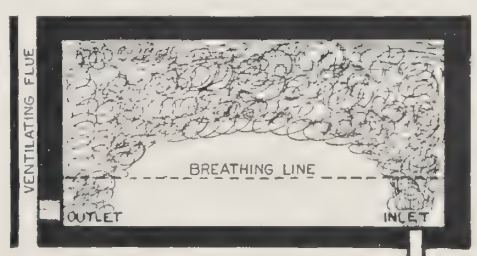


FIG. 9. AIR ADMITTED AT BOTTOM, DISCHARGED NEAR BOTTOM.

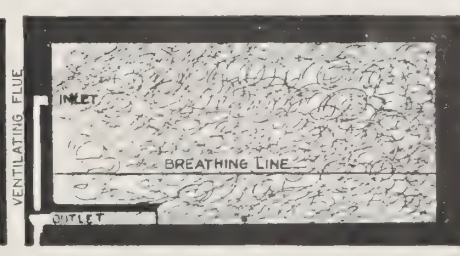


FIG. 10. INLET NEAR TOP, DISCHARGE NEAR BOTTOM.

The mechanical systems of ventilation are, on the other hand, affected by no stress of weather, and the force available is always sufficient to overcome the counter effects of wind or difference of temperature. It is for this reason positive and reliable.

It has been shown to be under usual circumstances much more economical to operate; consequently the advantages appear to favor the mechanical systems from all standpoints of view.

Capacity of Fans: The fans for ventilation are generally operated at such a speed that the outer periphery

second, the power required would be 5.2 horse power, or 8 times as much as in the preceding case.

Change of Air: In considering problems of ventilation the amount of air required may be expressed very conveniently in a form expressing the number of times that the air will need to be changed in any given room per hour. As an illustration, supposing that a room is seated for sixty pupils, that each pupil requires 2,000 cu. ft. of air per hour, and that consequently we must supply for this ventilation 120,000 cu. ft.; supposing that the cubic contents of this room be 20,000 cu. ft., we would

then need to change the air in the room to meet this requirement six times per hour. It will generally be found that in order to properly ventilate school buildings the air will need to be changed from six to twelve times per hour.

Limit of Velocity: The air which is discharged from rooms by natural ventilation would ordinarily pass out with such a velocity as would be produced by a flue having the height and temperature as previously described, yet it is best that such velocity be reduced to such an extent as to produce no sensible draught in the room from which the air is taken. The air in flues and passages, either flowing to or from the room, may move at high velocity without detrimental effect; but that through the registers should be moderate: the limit may perhaps be put at 5 or 6 ft. per second (300 to 360 ft. per minute) for the entering air, and 7 or 8 ft. per second (420 or 480 ft. per minute) for the discharge air. This will vary with conditions, however. In practical construction the register either for the supply air or the discharge air should be made large enough to permit the necessary flow at the desired velocity. The following table is a convenient one for estimating the area of a register required for supplying air to a room. The table gives the net area; hence to the amount given by the table an addition should be made to cover loss by grills and other obstructions, which can usually be taken at 50 per cent.

It will be noticed from the table that if the air in a room is to be changed six times per hour and to enter through a register at a velocity of 5 ft. per second, or 300 ft. per minute, we shall require 48 sq. ins. for each 1,000 cubic ft. of space in the room; when an allowance for grills, etc., has been made, the register area will be increased 50 per cent. and become 72 sq. ins.

This table will be found a great convenience in laying out a system of registers, as it will apply to any system of heating and ventilation.

NET REGISTER AREA

IN SQUARE INCHES FOR EACH 1,000 CUBIC FEET OF SPACE.

Velocity feet.		NUMBER OF TIMES AIR CHANGED PER HOUR.									
Per second.	Per minute.	1	2	3	4	5	6	8	10		
1	60	40	80	120	160	200	240	320	400	sq. ins.	
2	120	20	40	60	80	100	120	160	200	"	"
3	180	13.3	26	40	53	67	80	107	133	"	"
4	240	10	20	30	40	50	60	80	100	"	"
5	300	8	16	24	34	40	48	64	80	"	"
6	360	6.7	13	20	27	33	40	53	67	"	"
8	480	5	10	15	20	25	30	40	50	"	"
10	600	4	8	12	17	20	24	32	40	"	"
15	900	2.7	5.3	8	11.3	13.3	16	21	26.6	"	"
20	1200	2	4	6	8.5	10	12	16	20	"	"
25	1500	1.6	3.4	4.8	6.8	8	9.6	12.8	16	"	"
30	1800	1.3	2.7	4	5.7	6.7	8	10.5	13.3	"	"

Introduction of Air: The best method of introducing air into rooms is not determined with any very great amount of precision by different authorities; indeed, it will be found that there is a great difference of opinion

on this subject. Some eminent engineers contend that all the fresh air should be introduced at the bottom of a room and taken out at the top; others equally eminent contend that all the fresh air should be introduced at the ceiling and taken out near or at the floor. There are very strong arguments for both methods, and it is doubtless true that either the one or the other may be used under special conditions

with success. It is probably true that the best heating and ventilating engineers at the present time use either method, depending upon conditions. It is a fact which is well proved by experiment that the diffusion of air will be affected greatly by the velocity of the entering air, by the position from which the air is supplied, and by the form and dimensions of the room. Consequently, the method which may be successful and give good results in rooms of certain proportions would fail altogether with rooms of a different form. It is doubtless true that less force is required for an upward system of ventilation than for a downward system, but, on the other hand, this very fact tends to make the problem of an equable diffusion of air and heat more difficult with the upward than with the downward system. The following diagrams, see Figs. 5 to 10, show the results of experiments made by introducing air into a small room in various positions, and also of changing the location of outlet. In the diagrams the location assumed by the fresh and pure air is shown by shaded lines. The object of the experiment was to obtain a uniform distribution of the fresh air in each case. It will be noted that this object was most nearly accomplished when the inlet and outlet were in the relative position shown in Fig. 10; in all other cases there was a tendency for the fresh air to take a direct path from the inlet to the outlet, leaving the greater portion of the room without ventilation. It will be noted that these experiments indicate the best diffusion of the pure air when the inlet is

situated at about two thirds of the height from floor to ceiling and the outlet is near the floor in the same side, but at the opposite diagonal corner. It has been proved practically that with rooms of about the proportion shown in the diagram, good results in the diffusion of heat and air are obtained by introducing the air at a point two thirds of the distance from floor to ceiling and

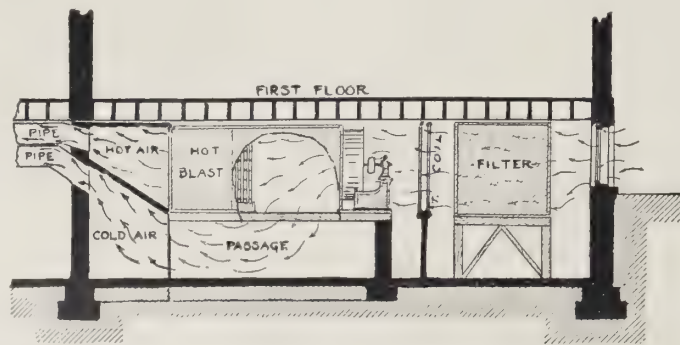


FIG. 11. ARRANGEMENT OF BLOWERS.

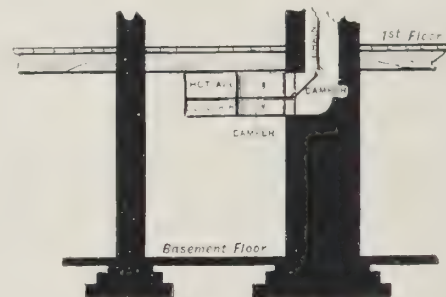


FIG. 12. CROSS-SECTION SHOWING HOT-AIR AND COLD-AIR DUCTS AND MIXING DAMPER.

near one corner, and locating the register for discharge of air on the same side of the room, but near the floor and near the lower diagonal corner. Much better results are obtained by keeping both heat and vent flues near an inner wall, and many designers arrange, when possible, to bring in the supply of fresh air over a door. As the motion of the air is aided materially by heat, it is evidently of great advantage that the flues for supply of fresh air or discharge of vitiated air should be kept as warm as possible when an upward current is desired. When a downward current is desired the flue should be kept as cool as possible.

It is perhaps impossible to specifically state directions for admitting and removing air into a room which would not be open to exception. The methods which have been given outline the principles to be considered, and describe methods which have generally proved satisfactory.

Heating: Heating may be performed with various mediums, of which steam, hot water, and hot air is principally used. In each case the medium for warming is heated at some convenient point in or near the building, and transferred while in the heated state to the place where warmth is required. The method of heating by hot air might seem to be the best suited for school-houses from the fact that the air under such conditions may be made to provide both warmth and ventilation. There is, however, a certain difficulty arising when systems of direct hot-air heating are applied to large buildings, due to the fact that the

force which is available for moving heated air is a very small one, and consequently the circulation produced is likely to be affected by winds and outside air currents. A heater for hot air is commonly termed a *furnace*, and in the construction usually adopted the cold and fresh air from the outside is drawn over the heated surfaces of the furnace and discharged into the various rooms by the force of gravity pressing downward on the colder air outside. In small school buildings good results both in heating and ventilating have been obtained with the furnace system, but such results are unusual in large buildings, and it is now generally believed that this system can be applied successfully only to small buildings. It cannot be recommended as a successful system for buildings containing more than eight rooms. Even for such a simple case as a six-roomed building difficulty will be found at certain times to secure a uniform diffusion of the heat and air. It may incidentally be remarked that in connection with the furnace systems of heating, instances are on record in which attempts have been made to warm and ventilate rooms with hot air in

which no ventilating ducts were provided to carry off the air discharged from the room. While in our previous discussion we have said little regarding the ducts for discharging the air, yet it must be evident on consideration that if means are provided for supplying air to a room means must also be provided for the discharge of air from a room, or we should soon have a state of congestion of air which would prevent the admission of any further supply.

It is quite true that a certain amount of success has attended some of the old furnace heating systems which were erected without ventilating ducts, due no doubt to the fact that the heated air escaped through crannies in the walls, cracks around windows, etc.

Steam heating is, perhaps, more usually employed than any other system, especially for school buildings of large size; hot-water heating systems are used only to a limited extent. Either steam or hot-water heating can be used by placing the radiation directly in the rooms, or using the radiation to warm the air supply

which furnishes the rooms with ventilation. The direct radiation systems, while useful under certain conditions, afford no ventilation, and at the present time are seldom installed to any great extent for schoolhouse heating in recent buildings. Both steam or hot-water radiation may be placed at the bottom of air flues and thus used to warm air which ascends into the rooms, giving a system of natural ventilation; but this system is open to all the

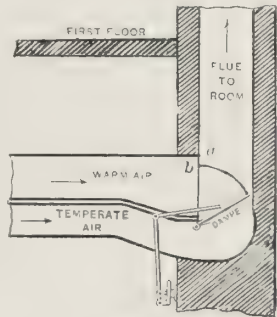


FIG. 13.

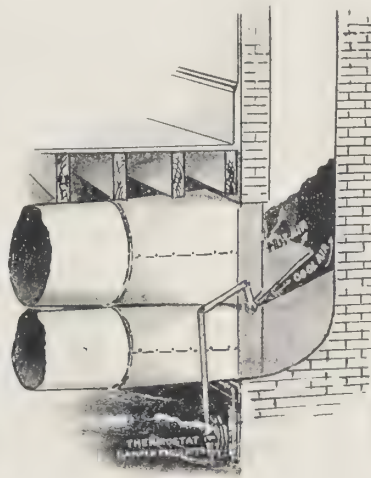
FIG. 14.
MIXING DAMPERS.

FIG. 15.

objections which pertain to any system of natural ventilation. At the present time the system of heating and ventilation principally used in the best constructions is an indirect system of heating in which a fan or blower is employed to drive the required air over the heating surface, or around it as required to produce the desired temperature, and thence into the various pipes leading to the rooms as shown in the sketch, Fig. 11. In the most approved construction, the fan is operated at a constant speed, so as to deliver a uniform amount of air. The amount of heat is varied to suit the requirements for a uniform temperature in the room by passing the current of air directly in contact with the heating surface or under or above it as desired. This system, as usually constructed, is shown in the diagram, Fig. 11, and is seen to consist of a few coils of steam piping, marked tempering coil, between which the air is passed by suction, thence the air is drawn through a blower which delivers it either between the coils of a heater or under these coils as may be desired to maintain a uniform temperature in the rooms. This system requires two pipes or

passages leading from the blower — one for hot air, the other for cool or tempered air — to the foot of a vertical flue leading to the room to be warmed. A damper located at the foot of the vertical flue is arranged to be adjusted either by hand or thermostat to admit any proportion of warm or cool air into this vertical flue required to keep the room at the proper temperature. This system gives every room a constant amount of ventilation, the dampers being so arranged that as one pipe is closed the other is opened. The volume of air cannot be varied which is delivered to each room. Appliances in each room regulate the relative amount of hot and cool air independent of all others, which insures an independent regulation of

air is usually 50 per cent. greater than that for the cold or tempered air. Figs. 12, 13, 14, and 15 show different arrangement of dampers for admitting and mixing the air from the two pipes leading from the blower to this vertical flue. This damper is arranged in some cases by means of rods or chains so that it may be operated from the room above by hand, and in other cases by means of a thermostat which is operated automatically by change of temperature in the room above. The figures show various forms of these dampers.

The diagram, Fig. 16, shows plan and elevation of this system of heating a schoolhouse, and is copied by permission from the catalogue of the Buffalo Forge Company. This diagram shows the position of the fan for delivering over or around a heater, and also the layout for the main pipes leading from the heater to the various rooms. The relative positions of hot-air registers and

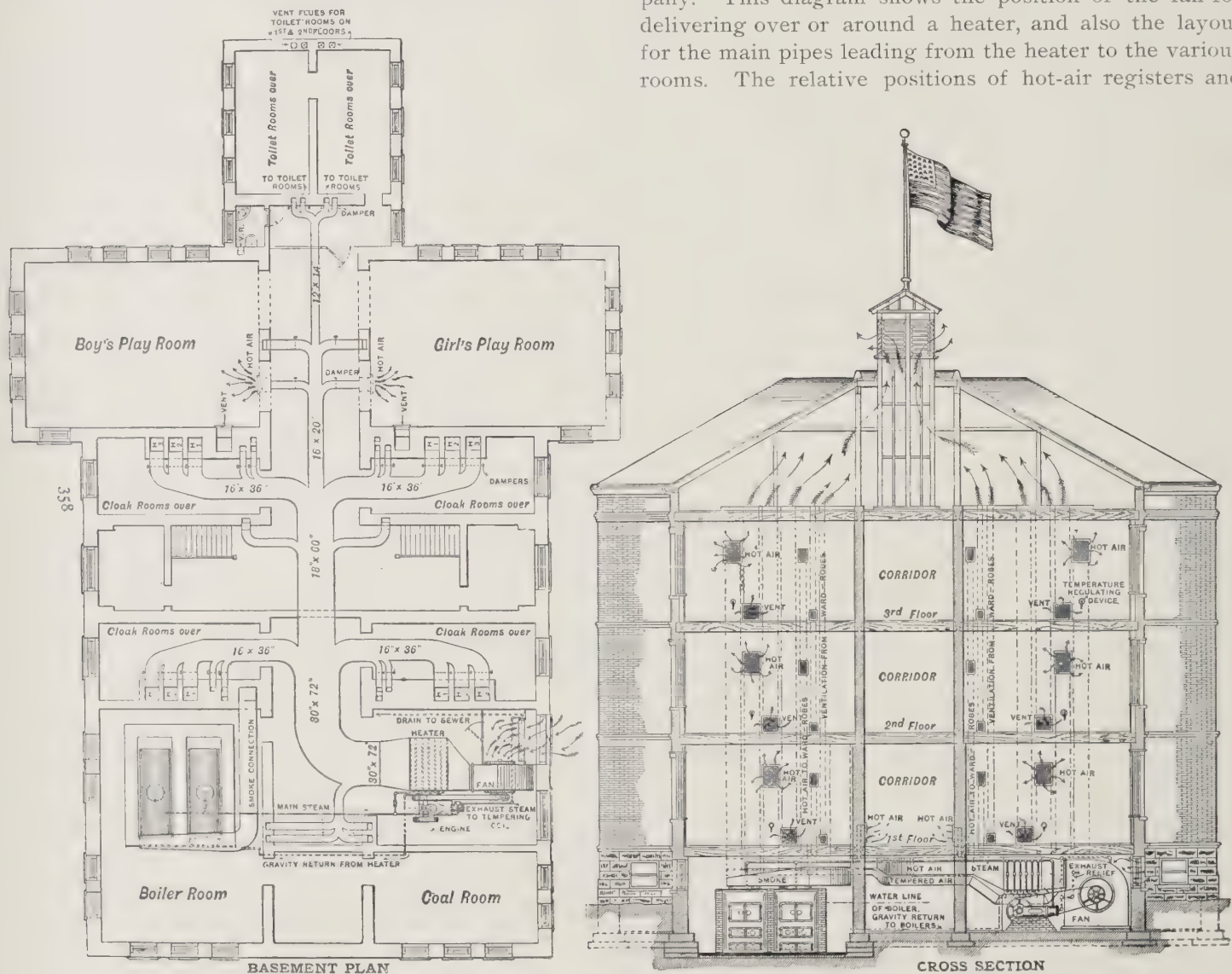


FIG. 16. DOUBLE DUCT SYSTEM OF HOT AND COLD AIR SUPPLY.

temperature depending upon its requirements. It is in many respects a model system. Vent ducts are provided from each room independent of those from any other room. The pressure produced by the fan insures circulation, and if the air is properly introduced into the rooms, there is a good diffusion and also a free discharge of air from the vent ducts.

The object of the tempering coil is to warm all the air to a point that it will not chill the pupils when entering the room. The pipe for the warm air and for the tempered or cool air join, as previously described, near the vertical flue leading to the room. The area of pipe for the hot

vent registers in each room are also shown. The heater over which the air is driven by the pressure from the fan may be located so that the cool air will be shunted either below or above or at the side; the common practice is to shunt it below the heater, but recently one prominent engineering firm has arranged the heater so as to shunt the cool air above. This is probably an advantage, and will doubtless be generally followed in the future.

Various other modifications of the blower system of heating and ventilating have been used with success. One modification consists in the use of exhaust fan in the vent ducts, another the use of a single pipe from the

blower to the foot of a flue leading to the room, and the use of an independent steam heater for each room through or around which the air could be shunted. The blowers have been driven by gas engines or by electric motors. Any one of these modifications may be better suited to meet existing conditions, and no judgment could be entered as indicating that one system was superior to another.

Direct Radiation: It is usually desirable to warm those portions of a building in which ventilation is not required by direct radiation, and in some instances direct radiation has been employed as a heating accessory for the main school rooms, but this I do not think is to be recommended. The use of direct radiation for heating halls is in my opinion good practice; these halls are frequently connected with the outside air by the opening of doors; they are usually needed only for passageways, but in order to keep pupils in best health they should be maintained at as high a temperature as that of the recitation rooms. To meet these various conditions nothing is better than direct radiation, and so far as my experience goes nothing can be operated so economically. For the purpose of warming halls I should advise that the radiating surface be computed by the following method: Estimate the area in square feet of the exposed wall surface including windows, of this take one fourth, add to the result the area of glass surface in square feet, and three times the volume of the hall in cubic feet. The radiating surface should equal in square feet one fourth the last result.

Heating Surface for Blowers: It will generally be found that if the air be delivered into the room at a temperature of 120 degs. and a sufficient amount be supplied for ventilating purposes, the room will be kept comfortable in all stresses of weather. For this condition it will be found that if the air passes over or in contact with a heater containing 20 rows of 1 in. steam pipe, 3 cu. ft. of air will be heated per minute for each foot in length of pipe. By dividing the total amount of air required in the building per minute by 3, the total length of inch piping in the heating surface may be computed.

Much more could be stated in relation to the heating and ventilating of schoolhouses, but the limits of the present article cannot be further extended, and it is thought that sufficient has been written to give an idea of the problems which confront the person who would heat and ventilate school buildings.

FROM many quarters we hear reports of the formation of municipal art societies and general movements tending towards the embellishment of American cities. New York, Cleveland, San Francisco, Baltimore, — each have vast improvements under discussion, and are studying what metropolitan Boston has already achieved with so much success. Possibly the most comprehensive organization now assuming shape is the newly formed Fine Arts Federation of Philadelphia, which is made up of delegates from different organizations, including representatives from all the departments of the municipal government. It proposes to hold a public meeting in the spring to which speakers from several cities are to be invited.

Fire-proofing.

A NEW FIRE-PROOF CONSTRUCTION.

THE tremendous advance in the price of steel work of every description has had the effect of checking a great deal of building during the past eighteen months. There does not seem to be any immediate prospect of reduction in the cost of this most important building material, and, as we have repeatedly remarked in these columns in the past, the prevailing high price is sure to set us thinking whether it is not on the whole better to build our buildings without steel of any sort. This is quite aside from considerations of rust or corrosion, which of themselves are potent factors in suggesting the employment of material which possesses a greater degree of permanence. We have, however, so accustomed ourselves of late years to consider that a fire-proof building must necessarily be of the steel construction type that we are apt to lose sight of the fact that it is perfectly possible to erect a building, or at least some types of building, with an extreme minimum of steel and without the use of any steel beams whatever. An attempt in this direction has been made with a very considerable degree of success by Henry Maurer & Son, manufacturers of fire-proofing, No. 420 23d Street, New York, who have devised a new method of fire-proof construction, which they designate as "Herculean," by which all of the floor construction is entirely self-contained. It consists essentially in an assembly of rows of square blocks, between which are placed light T-irons fitting into grooves provided for them in the terra-cotta blocks, the iron being

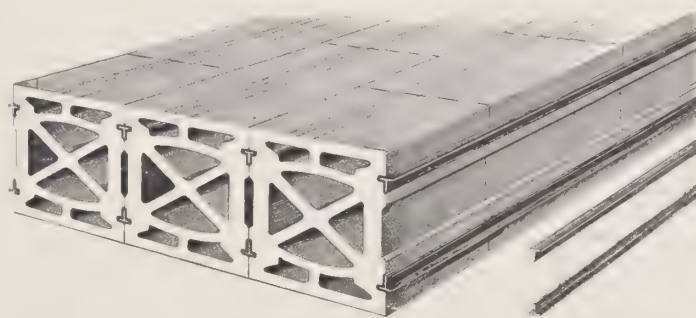


FIG. 1. "HERCULEAN" FLAT ARCH FLOOR CONSTRUCTION.

thoroughly bedded in cement. (See Fig. 1.) The T-irons are protected by not less than 2 ins. of terra-cotta on all sides, and as this system admits of an almost indefinite extension as regards spans, it will readily be seen that floor beams can be omitted entirely, the tensile stresses produced by vertical loads being taken up by the T-irons, while the compressive strength of the terra-cotta blocks is ample for all emergencies. No concrete or other filling is necessary, the blocks forming both floor and ceiling, ready for plastering. The blocks are made of various sizes, regulated by the width of span, from 4 to 14 ins. thick. Exhaustive tests have been made of the rigidity and strength of this construction. For a span of 20 ft. in the clear with 12 in. blocks, a load of 500 lbs. to the square foot was imposed and left in position for several months, producing a deflection of only $\frac{9}{16}$ of an inch. Drop tests of 1,000 lb. dead weights were also made without producing any deformation of the construction.

While this method would perhaps be most available for the construction of large fire-proof structures, such as factories and warehouses, it is particularly suitable for

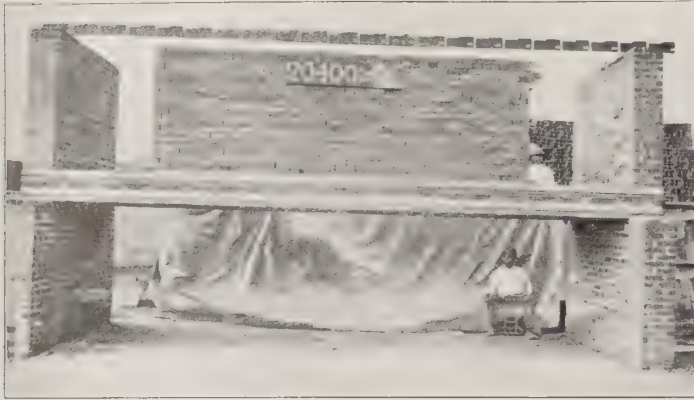


FIG. 2. TEST OF ARCH.

ordinary dwellings, and its cost and ready adaptability are such that there is no reason why any form of dwelling should not be constructed with its use. In order to show its possibilities Henry Maurer & Son have just completed at their works in New Jersey three dwellings, each 22 by 42 ft., two stories in height, with sub-cellar and with every modern improvement, thoroughly fire-proof throughout, with 2 in. partitions, at a total cost of \$3,000 for each building. Fig. 3 shows the interior construction of one of these houses.

While this construction is new, it presents so many good points and embodies so thoroughly the results of long years of training in fire-proof construction that it



FIG. 3. SHOWING INTERIOR CONSTRUCTION.

readily demonstrates what we have felt to be a fact, that houses of limited cost can be economically built of fire-proof construction throughout within limits of expense which would compare favorably with that of the ordinary and quite uninteresting frame house. Most of our blessings come to us in disguise, but if the high prices of steel which our constructors and investors are now resenting should result in a more general adoption of some such system as this, we could well afford to pay the price.

THE THEATRE FRANCAIS FIRE.

THE fire which resulted in the almost total destruction of the Théâtre Français, Paris, is one of those reminders that there are some things that are not done better in France. We have often to complain of fires in our fire-proof buildings, but although the inflammable nature of our American constructions is held up to the readers of foreign magazines as a dreadful warning, it would be almost impossible for any American city to be caught in the predicament which accompanied the fire in Paris. The conflagration started shortly after noon. Apparently the first thought of the management was the very laudable one of rescuing the imperilled artists, who were about to begin their rehearsal. Then the fire department was summoned with the usual promptness which characterizes affairs of that sort in Paris, but, as the despatches naively remark: "Twenty minutes elapsed before the first detachment arrived and then only hand pumps were brought. Finally steam pumps came, but then it was found that no water was to be had. It was 12.45 P. M., nearly three quarters of an hour after the alarm was raised, before an adequate stream of water was poured into the burning building, which by that time was quite beyond help."

This is very amusing reading to Americans, who are accustomed to the almost instantaneous work of an ordinary, well-equipped fire department. Nevertheless, in a broader way, such an occurrence speaks volumes for the construction of the foreign buildings. We should hope that at no time would our fire department ever arrive at such a condition as was indicated in the despatches, but it stands to reason that Frenchmen have never been blind to the possibilities of a conflagration, and if their firemen are so lax it is because they are so seldom called upon to cope with a fire of any magnitude. Our fire-proofing methods are more scientific, and, on the whole, more generally applied, especially in down-town districts, than is the case in Paris. But we do not seem to have materially diminished the number of our fires thereby, either up or down town, and though we may smile at the performances of the French *pompier*s we may well envy the conditions from which such slackness arose.

BY an oversight, we failed to mention in our January issue the fact that the original matter which appeared in this department concerning the special character of porous terra-cotta fire-proofing material, and that on maximum spans for flat terra-cotta arches of various cross-sectional areas, was prepared from data worked out by and under the direction of Mr. Henry L. Hinton, of the Central Fire-Proofing Company, of New York.—EDITORS.

Selected Miscellany.

NEW YORK NOTES.

The event of the past month of most interest to architects was the exhibition of the Architectural League which has just closed. It was conceded by all



OFFICES FOR A PHYSICIAN AND AN ARCHITECT, BURLINGTON, VT.

W. R. B. Willcox, Architect.

to be most creditable and in advance of all former exhibitions. For some reason or other there was a noticeable absence of work by our best Beaux Arts architects, Carrere & Hastings, Ernest Flagg, and Howard & Cauldwell, although the breach was admirably filled by the magnificent drawings of M. Benard for the University of California Buildings. Indeed, this competition together with the Custom House was enough alone to make the exhibition a success and well worth a visit. Probably these exhibitions are of more value as a study and an object lesson to draughtsmen and young architects than they are to the general public, who are slow in becoming interested in an art which they consider dry and mechanical, although their prejudices are being slowly but surely removed.

If we may be permitted to touch once more upon the subject of competitions, it may interest our readers to know that a school board in a New Jersey town has advertised for competitive plans for a two-room school building to cost \$5,000. We refrain from giving the address, as they desire to limit the number of competitors to two hundred.

It is announced that the buyers of

the block fronting on the west side of Broadway, between 85th and 86th Streets, have had plans drawn by Hill & Turner for a seven-story apartment house, which is to be erected on the site at an estimated cost of \$400,000. An interesting feature of the plan is that they provide for direct communication between the proposed rapid transit underground station at 86th Street and the apartment house by means of private stairways. Tenants of uptown apartments will no doubt appreciate the advantage of being able to step on board trains dry-shod in inclement weather, but the idea of protected communication with stations ought to appeal especially to storekeepers in the shopping districts.

The suggestion that Fifth Avenue be widened by taking in the stoop space is one that is revived at intervals, but which could be better applied to Nassau Street and Broadway, between Chambers and Wall Streets, where increased space for pedestrians is much more needed than on the uptown thoroughfare.

The suggestion that Madison Square Garden be taken for the new uptown post-office has aroused opposition, on the ground that the city needs such a building for holding large gatherings, great shows, etc. It is true, if the garden is turned to other uses than those which it has hitherto found unprofitable, New York will probably be the only great city that does not possess a building suitable for large gatherings and spectacles; but it is also highly probable that if this should become the case, the necessity for such a building would soon become apparent, and private enterprise would quickly supply it, though in a location where taxes are not so excessive, and where it could be made to pay.

CHICAGO NOTES.

Mr. John H. Bogue, who is promoting the building of "Mills's Hotels" in Chicago, recently gave a lecture on this subject before the Architectural Club. The application of the idea to local conditions was discussed and the lecture was illustrated with lantern slides of the Mills Hotel, No. 1, in New York.

At a recent meeting of the Illinois Chapter of the A. I. A., at the Art Institute, Mr. Samuel A. Treat gave



BATHING ESTABLISHMENT, REVERE BEACH, MASS.

Stickney & Austin, Architects.

an informal talk on "Past and Present Factory Construction," which was supplemented on the following day by a trip through the Western Electric Company's new factory buildings, and an inspection of the various electrical products turned out by the company.

The August Maritzen Company, of Chicago, an Illinois corporation advertising itself as "architect," and which has been the defendant in a civil suit brought on behalf of the State by the Board of Examiners of Architects, for using the word "architect" in its signs, etc., has escaped further prosecution of the suit upon payment of costs and abandonment of its illegal practices. This company, of which Mr. August Maritzen, a licensed architect, was the head, was organized to act as "architects, engineers, and contractors," in violation of the Illinois license law, which expressly forbids the practice of architecture by a corporation. This suit was the last of several of a similar nature in which the defendant corporations after short legal contests thought best to abide by the law.

For some time the Chicago Woman's Club has taken an active interest in the movement for a more beautiful city. Its first practical move in this direction is the appropriation of \$1,000 for the improvement of the triangular space at the intersection of Bellevue Place, Rush and State Streets, known as "Oak Park," after the designs of Mr. Birch Burdette Long, one of a number submitted in the recent Architectural Club competition for prizes offered by Pratt & Lambert. While Mr. Long's design was not premiated, owing to the opinion on the

part of the jury that it exceeded the limitations as to cost, it was generally conceded to be not only the best, but a very original and appropriate scheme. It provides for a simple shelter roof of timber and tile on brick and terra-cotta piers, a brick and terra-cotta fountain in the foreground, suggesting in general form an Italian well-curb, in a pleasing setting of lawn trees and shrubbery. The terra-cotta ornament is treated in polychrome. In announcing the selection of this design the committee of the art department of the club stated that it was chosen "because it seemed best suited to the conditions, and was distinctly original and not merely a conventionalizing of some old-world model." They expect to have the improvement completed early in the summer, and hope that it may prove an object lesson of what can be done for small parks at a nominal expense.



CARYATID, WHITE ESTATE HOTEL, NEW YORK CITY.
Executed by the Atlantic Terra-Cotta Company.
Barney & Chapman, Architects.



PANEL, POOLE LIBRARY, HAMDEN, MD.
Executed in terra-cotta by Conkling-Armstrong Terra-Cotta Company,
Joseph Evans Sperry, Architect.

Much interest is being taken in the coming thirteenth annual exhibition of the Chicago Architectural Club to be held at the Art Institute from March 20 to April 2. The foreign and American drawings now on the circuit of the Architectural League of America will be supplemented, it is hoped, by an unusually large and interesting exhibit of local work. Among the unique features of this year's exhibition will be the catalogue, and comprehensive exhibits bearing on the good housing problem, and municipal improvements. The catalogue will be issued without any advertisements whatever, the expense being met by subscriptions from citizens interested in the club and in the cause of good architecture. The number of illustrations will be nearly doubled and the quality of the reproductions will be of the best.

A new cover design to be used annually has been furnished by Robert C. Spencer, Jr., giving to the catalogue in its new form the title, "Book of the Exhibition of 1900." Shortly after the opening of the exhibition the Improved Housing Association will hold a series of conferences at the Art Institute.

NOTES FROM MINNEAPOLIS AND ST. PAUL.

Prospects in the Twin Cities are good, provided no trouble arises between contractors and their employees, and provided further that there is no more advance in price of lumber and iron. The former seems unlikely and we trust the latter equally so. Most people now realize that no great fall in prices will occur in the near future, and we do not expect any large enterprise to be "held up" on this account. The great advance in iron and lumber is leading architects to consider more and more the use of burnt clay for all their work.

The street paving question is again before us with the probability that brick has grown into favor and will be used more largely than heretofore.

The use of enameled brick for exteriors is somewhat new in Minneapolis, not so much so in St. Paul. The question as to its durability in our severe climate is an open one as yet. The new Tribune Building and two fronts



ELLIS HALL.

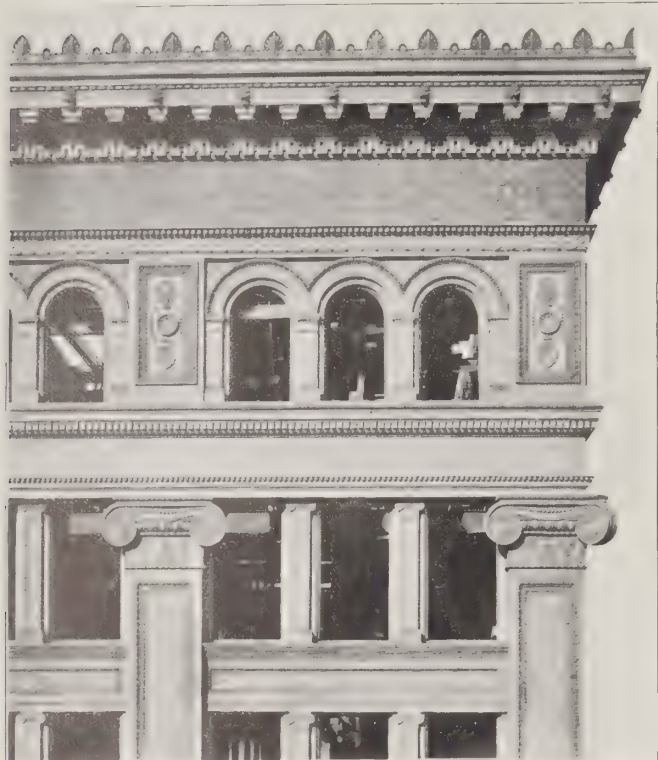


COMMITTEE ROOM.

INTERIORS. MASSACHUSETTS HISTORICAL SOCIETY BUILDING, FENWAY, BOSTON, MASS.
Wheelwright & Haven, Architects.

for the Realty Care and Improvement Company are the first ventures in Minneapolis, and their weathering qualities will be watched with interest.

Among the larger enterprises assured for Minneapolis



DETAIL, ANDRUS BUILDING, MINNEAPOLIS, MINN.
Executed in terra-cotta by the American Terra-Cotta and Ceramic Company.
Long & Long, Architects.

may be mentioned: Asbury Methodist Hospital, cost \$150,000, E. P. Overmire, architect; five-story business building for McCusick, Copelin Company, to cost \$60,000; annex to Donaldson Building, to cost \$50,000; the Olsen Arcade, to cost \$40,000; these latter two by Kees & Colburn, architects.

L. S. Buffington, once our leading architect, has abandoned the profession and made a fortune from his acetylene patents; he also claims to be the father of our modern steel skeleton construction.

Cass Gilbert has opened an office in New York City: the St. Paul office will be continued.

Ernest Guilbert, one of our best boys, has gone to New York City, being now in the office of Harding & Gooch. He was for several years in the Chicago office of Henry Ives Cobb, and for a time in the Boston office of Shepley, Rutan & Coolidge.

Architect Fred Kees has associated with him in business Serenus M. Colburn, for several years his head draughtsman. Both are to be congratulated.

IN GENERAL.

On Saturday, February 17, the Architectural League of New York entertained the T Square Club, of Philadelphia. The Philadelphians were met by a committee at the 23d Street Station, and escorted to the Manhattan Hotel, where dinner was served. Following, a reception was held in the American Fine Arts Society's Building

on 57th Street, where the exhibition was inspected, and a Bohemian evening was enjoyed.

The subject of the problem recently announced by the managing committee of the John Stewardson Memorial Scholarship in Architecture for the fourth competition to take place in March, shows a wise departure in the preparation of its programme. It calls for the improvement of the entrance to Fairmount Park, Philadelphia, by the proper treatment of the plot of ground bounded by Spring Garden Street, 25th Street, and Pennsylvania Avenue, and of the bank of the reservoir opposite the plot. More specific requirements were given at the School of Architecture at the University of Pennsylvania on Saturday, March 17, when the preliminary sketches were made. This is the first scholarship competition problem we know of which has been prepared with a view to interesting the student in local requirements, and for this reason should add a new and vital interest to the work. It is by intimately relating architectural education to the immediate requirements of a professional career that the best work is obtained.

It is announced that the Architectural League of America will send a delegate to the Fifth International Congress of Architects to be held in Paris during the summer. He will deliver an address in French upon the new movement in the United States.

Rumors come from Chicago to the effect that the Chicago Architectural Club is to be the first architectural society to hold an exhibition and publish a catalogue without soliciting advertisements, also that their forthcoming publication is to mark an equally important departure in its editorial make-up, which is under the charge of Mr. Dwight Heald Perkins.

The St. Louis Architectural Club will hold its annual

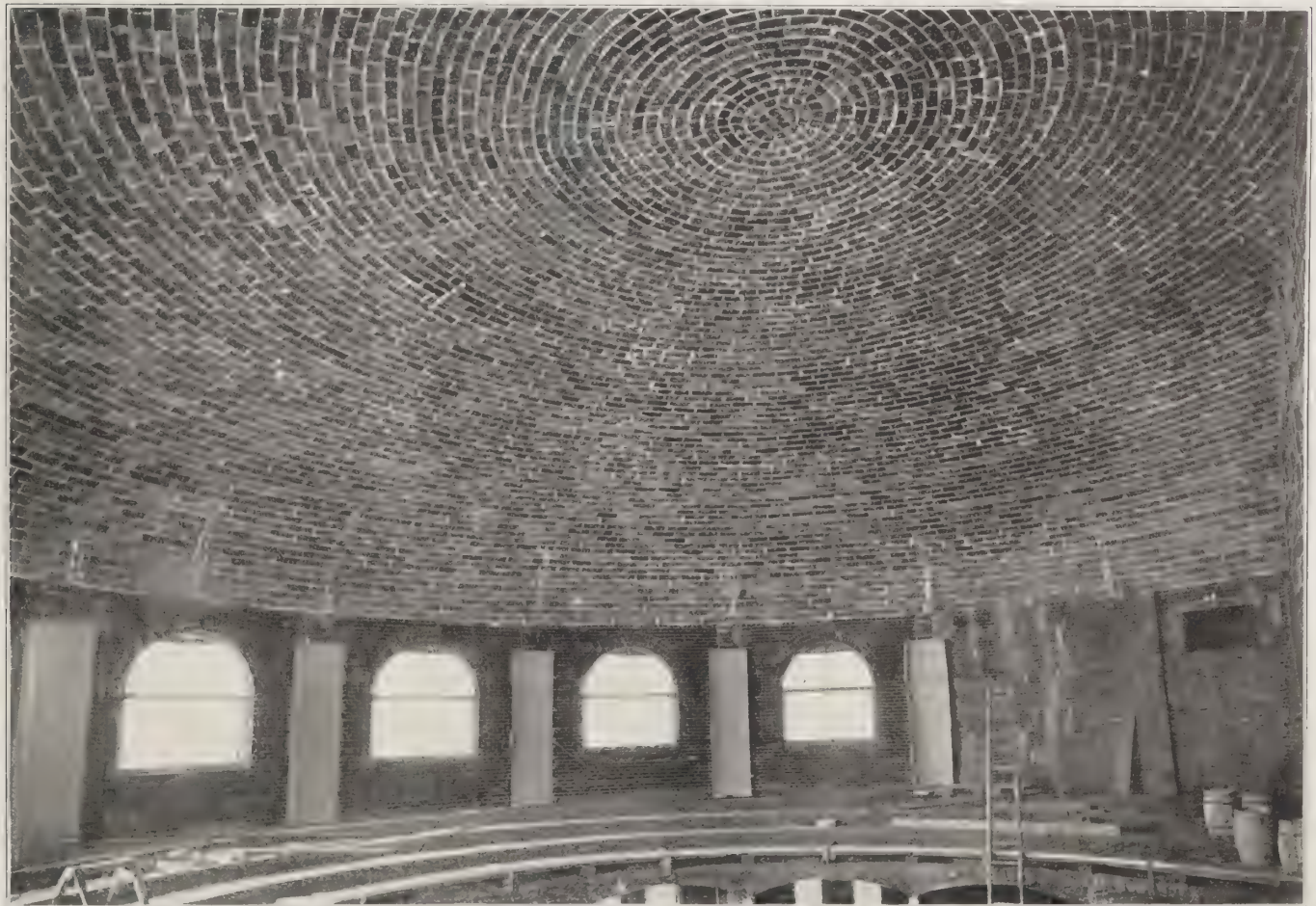


TERRA-COTTA CAPITAL.
Executed by the New Jersey Terra-Cotta Company.

architectural exhibition at the St. Louis Museum of Fine Arts, from April 7 to April 22, inclusive.



NURSES' HOME, CAMBRIDGE HOSPITAL, CAMBRIDGE, MASS.
Stickney & Austin and William E. Chamberlin, Associated Architects.



INTERIOR OF DOME FORMING CEILING AND ROOF, 70 FT. SPAN, OVER MAIN EXHIBITION HALL, SHOWING ALSO STEPPED MASONRY GALLERY FLOOR CONSTRUCTION IN GUASTAVINO SYSTEM. HIGH SCHOOL, EAST BOSTON, MASS.
John Lyman Faxon, Architect



VIEW OF MODELING DEPARTMENT, NEW YORK ARCHITECTURAL TERRA-COTTA COMPANY.

MANUFACTURERS' CATALOGUES AND SAMPLES DESIRED.

The following-named architects would be pleased to receive manufacturers' catalogues and samples: L. R. Christie, Gill Building, Steubenville, Ohio; W. Klinkert, San Jose, Cal.

CURRENT ITEMS OF INTEREST.

The Ohio Mining and Manufacturing Company has removed its New York office to 156 Fifth Avenue.

The Hartford Faience Company will furnish the terra-vitræ and faience wainscoting used in the new depot at Dayton, Ohio, Elzner & Anderson, architects.

A. E. Sprackling, architect, Cleveland, Ohio, has prepared plans for a five-story hotel building, to be of brick and terra-cotta. It will have all modern hotel conveniences, including ice machine and complete electric plant for light and power. Cost, \$200,000.

The Penn Buff Brick and Tile Company is supplying the enameled brick used in the Carnegie mansion, New York City, Babb, Cook & Willard, architects. About 200,000 bricks will be used.

The Atlantic Terra-Cotta Company is furnishing terra-cotta on the following contracts: St. Stephen's Guild House, Providence, R. I., Martin & Hall, architects; gymnasium, Foxboro, Mass., Charles Brigham, architect; Hamilton High School, Hamilton, N. Y., E. A. Quick & Sons, architects; Lenox Hotel, Boston, Mass., A. H. Bowditch, architect; Golf Club building, Babylon, L. I., Clarence K. Birdsall, architect; office building, Mercer and Spring Streets, New York City,

Clinton & Russell, architects; stable, 107 East 82d Street, New York City, S. E. Gage & W. J. Wallace, architects.

The Tiffany Enameled Brick Company has been awarded the contract to furnish their cream and green shades of enameled brick for the interior wainscoting of the new Chicago, Burlington & Quincy Railroad depot at Rock Island, Ill., Walter T. Krausch, architect.

The Celadon Terra-Cotta Company, Limited, will supply the roofing tiles on the following new contracts: Michigan Homeopathic Hospital, Ann Arbor, Mich.; library at Wallington, Conn., Wilson Potter, architect; residence for Thomas Woods, Colorado Springs, Thomas McLaren, architect; building for Western Tool Company, Kewanee, Ill.; West Side Grammar School, Evanston, Ill., Patton, Fisher & Miller, architects; Everett School, Boston, Mass., Fessenden & Libby, architects.

Fiske & Co., Boston, report the following new contracts for their line of front brick: Schools at East and South Boston and at Newton, Mass.; several dormitories for Harvard at Cambridge, Mass.; gymnasium at Mt.



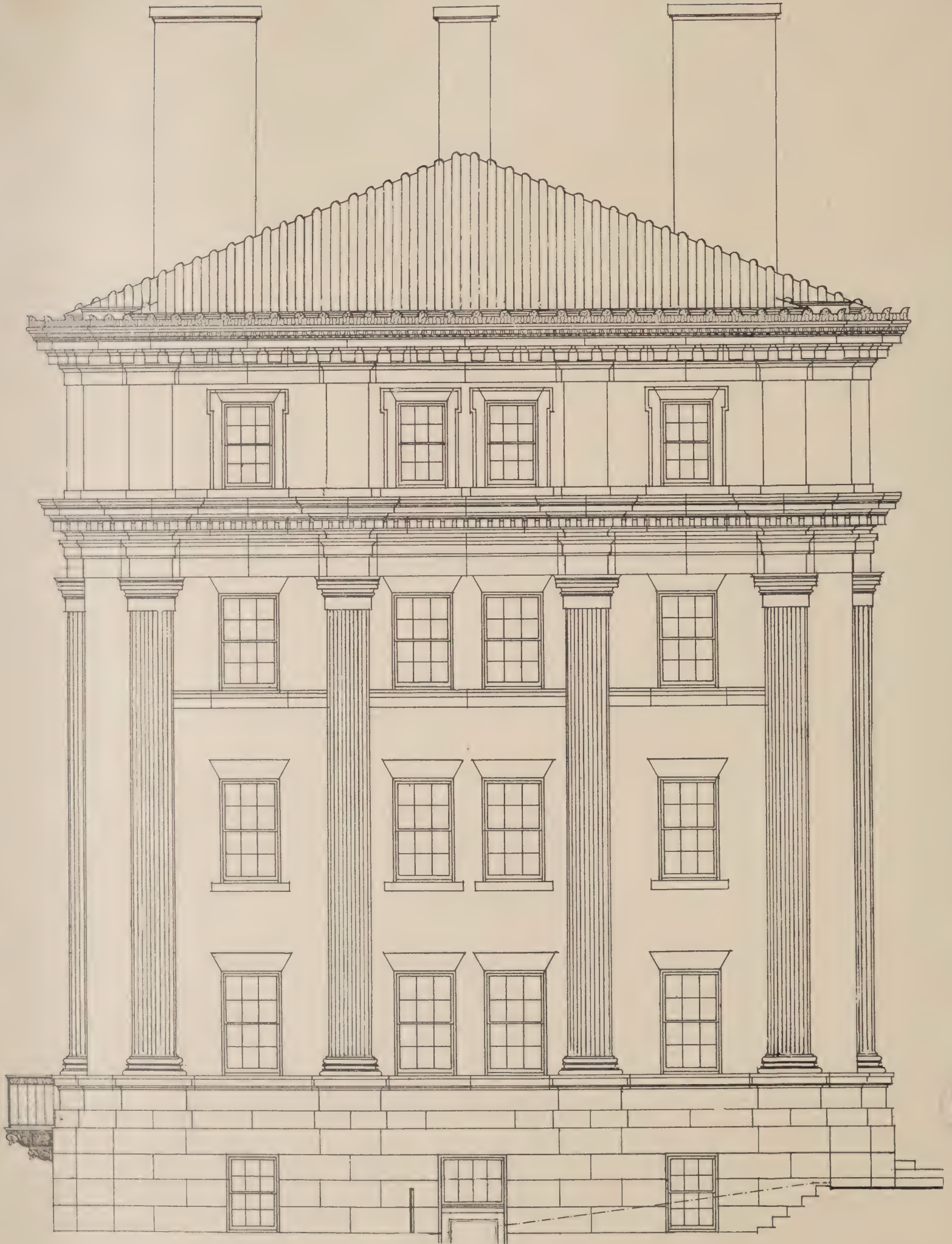
PEDIMENT OVER ENTRANCE, OPERA HOUSE, MERIDIAN, MISS.
Executed by the Perth Amboy Terra-Cotta Company.
Alfred Zucker, Architect.

Holyoke, Mass.; school for deaf and dumb at Hartford, Conn.; theater at Amesbury, Mass.; seminary at Hartford, Conn.

Of interest in connection with our illustrations of the Museum of Science and Art, University of Pennsylvania, Philadelphia, Cope & Stewardson, Frank Miles Day & Bro., and Wilson Eyre, associated architects, is the fact that the brick which have been used with such excellent effect were manufactured by Sayre & Fisher Company. These bricks are known as their selected hard-burned red, with black headers. The dormitory buildings for the same University, of which Cope & Stewardson are the architects, are built of these same bricks, as is the new Law School Building, by the same architects. The color is entirely new, and different from the ordinary red pressed brick; though they are pressed brick, there is enough roughness about them to give that character which is desired by many of our architects.



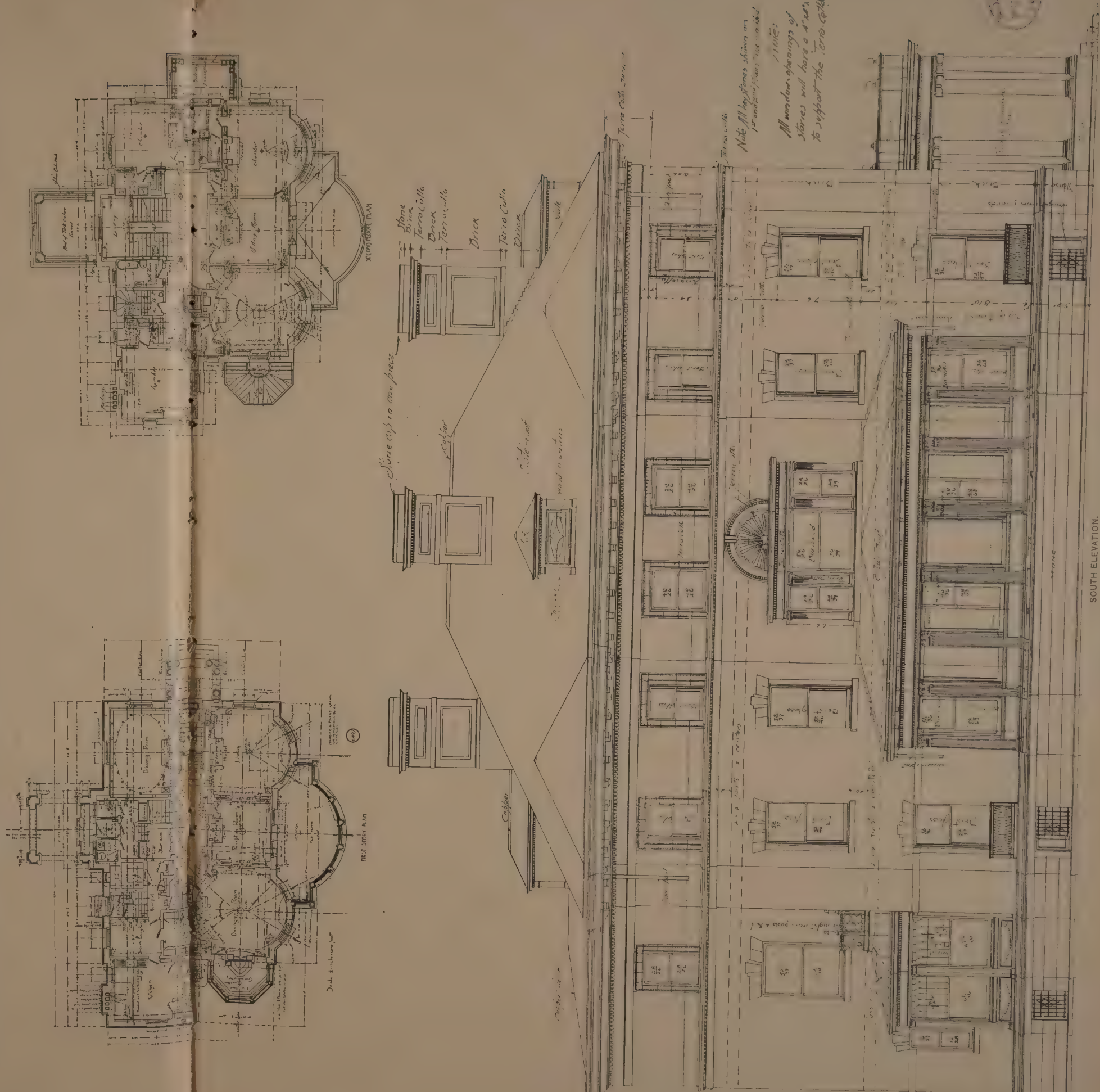
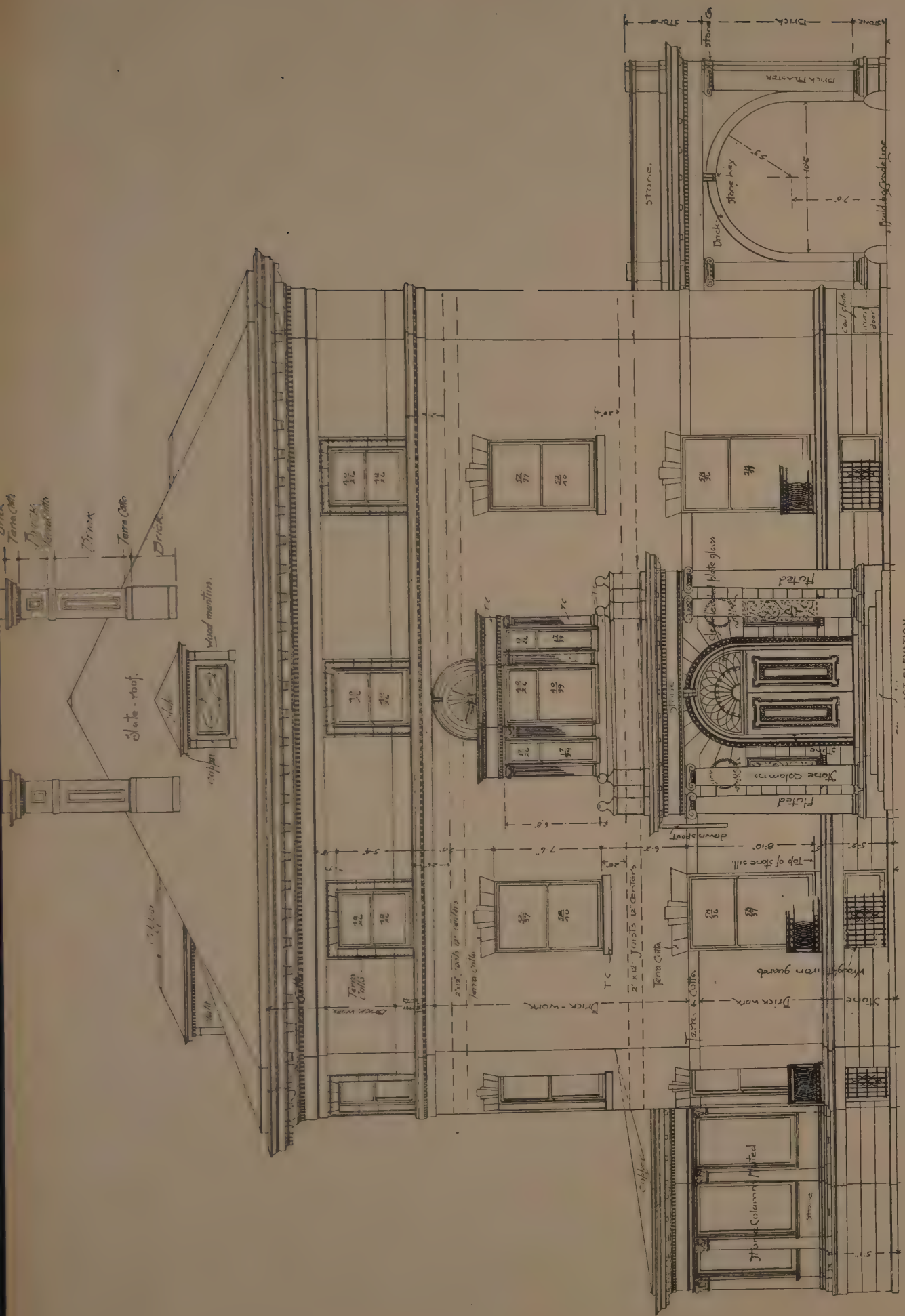
PANEL, SCHOOLHOUSE, CHICAGO, ILL.
Executed in terra-cotta by the Northwestern Terra-Cotta Company.
August Fiedler, Architect

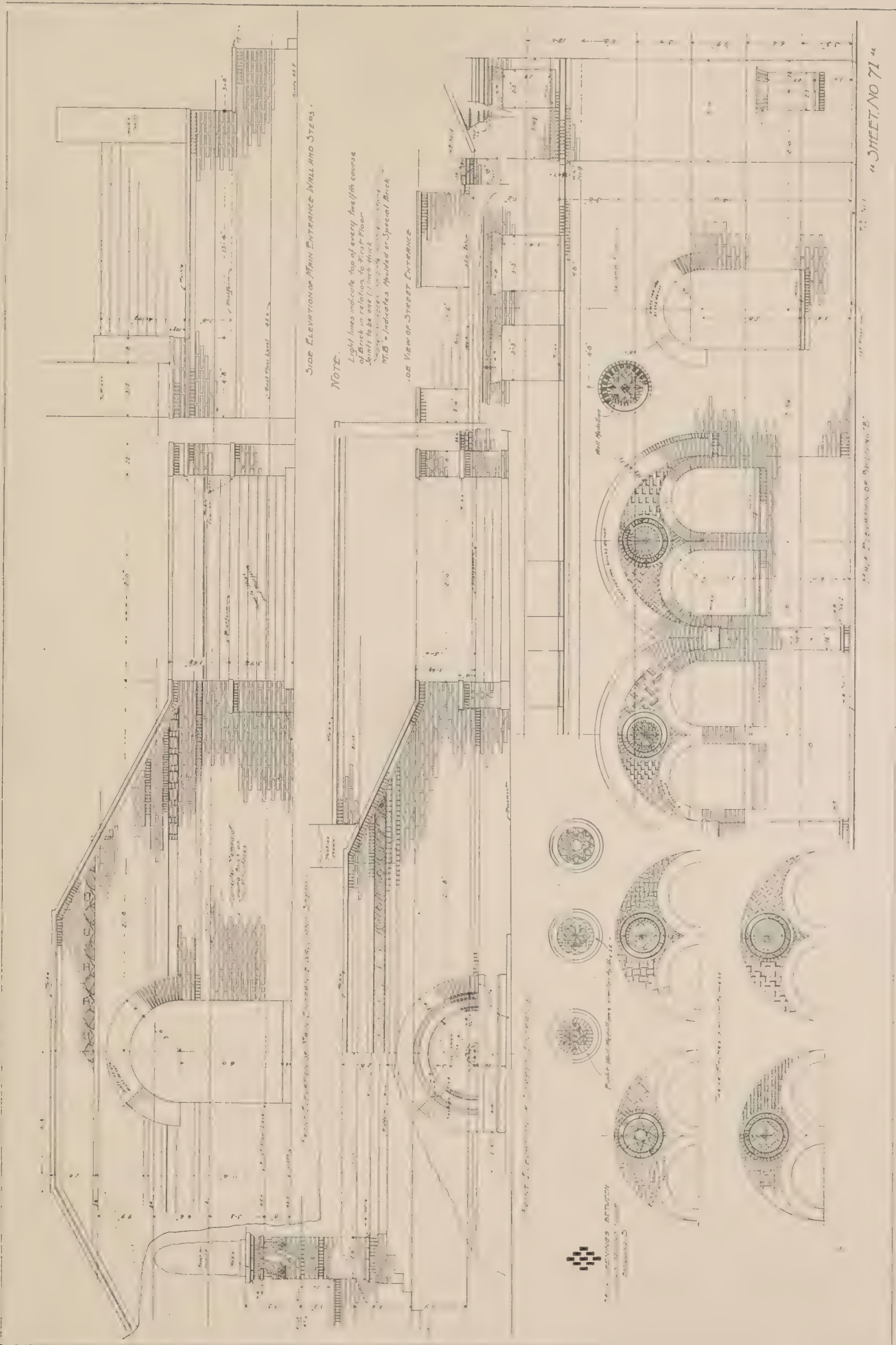


SIDE ELEVATION.

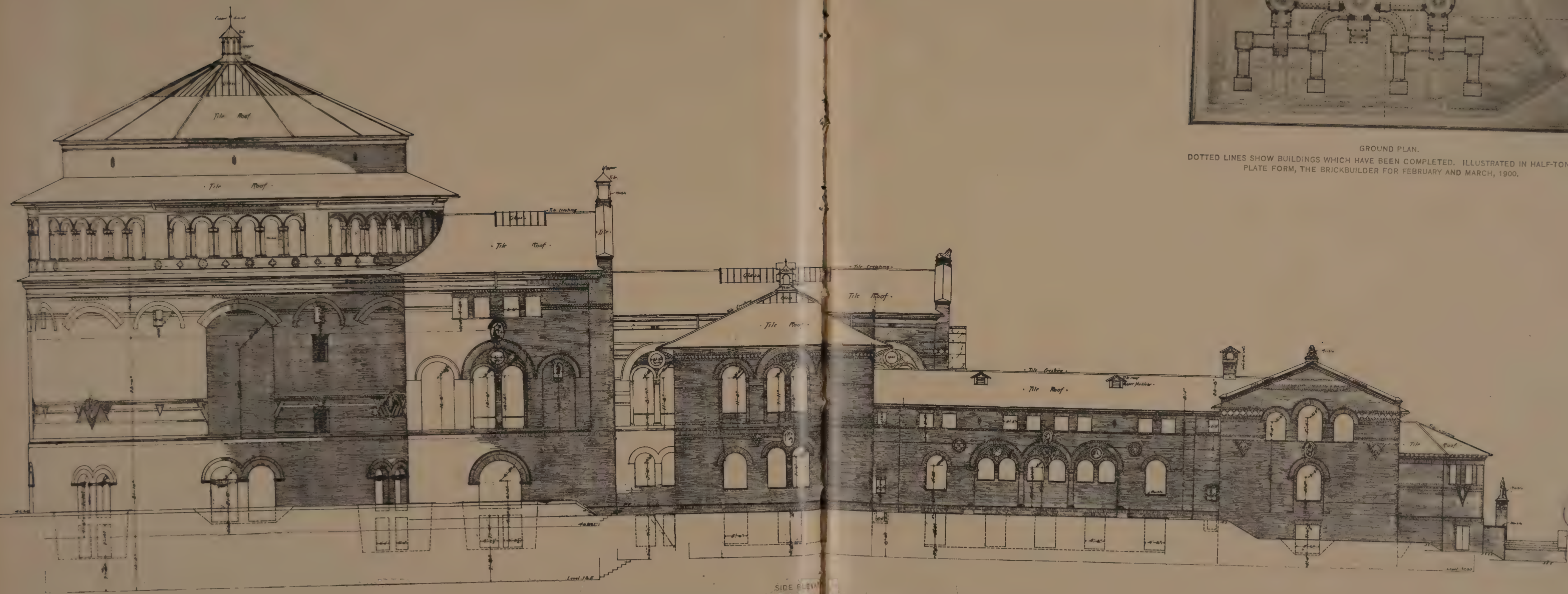
DORMITORY FOR THE UNIVERSITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY.

MCKIM, MEAD & WHITE, ARCHITECTS.

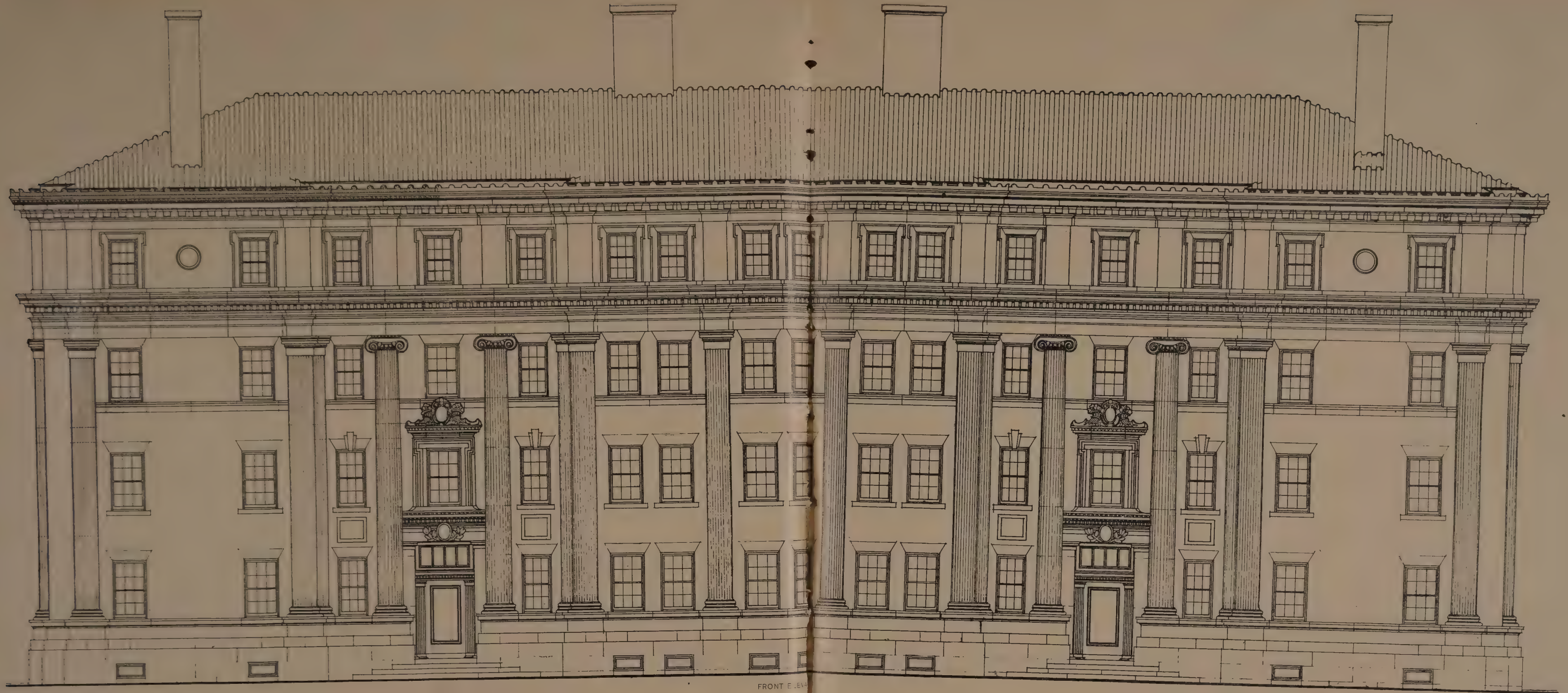




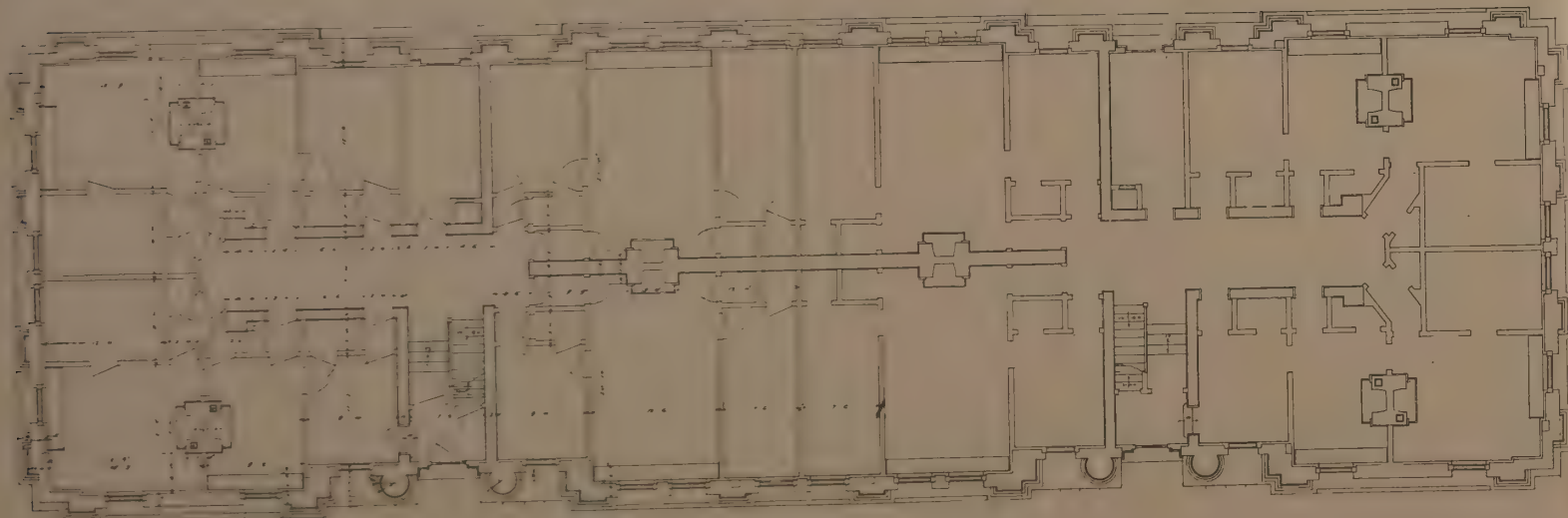
DETAILS, MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE JR., JOINT ARCHITECTS.



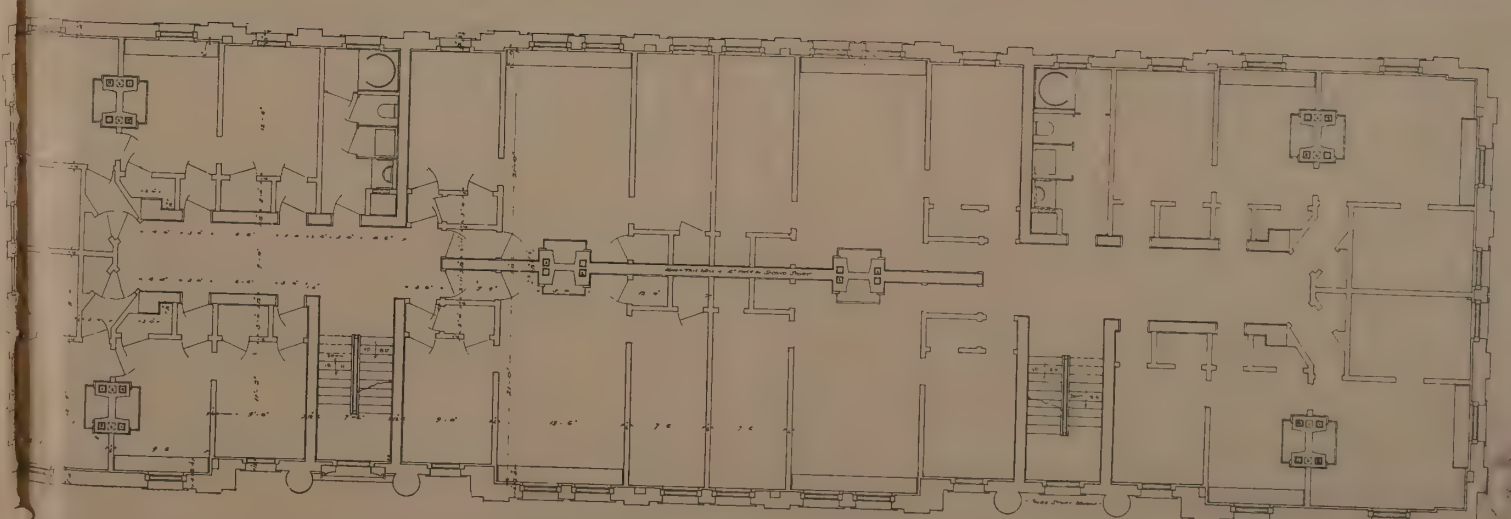
MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON, FRANK MILES DAY & BRIMON EYRE, JR., JOINT ARCHITECTS.



FRONT ELEVATION



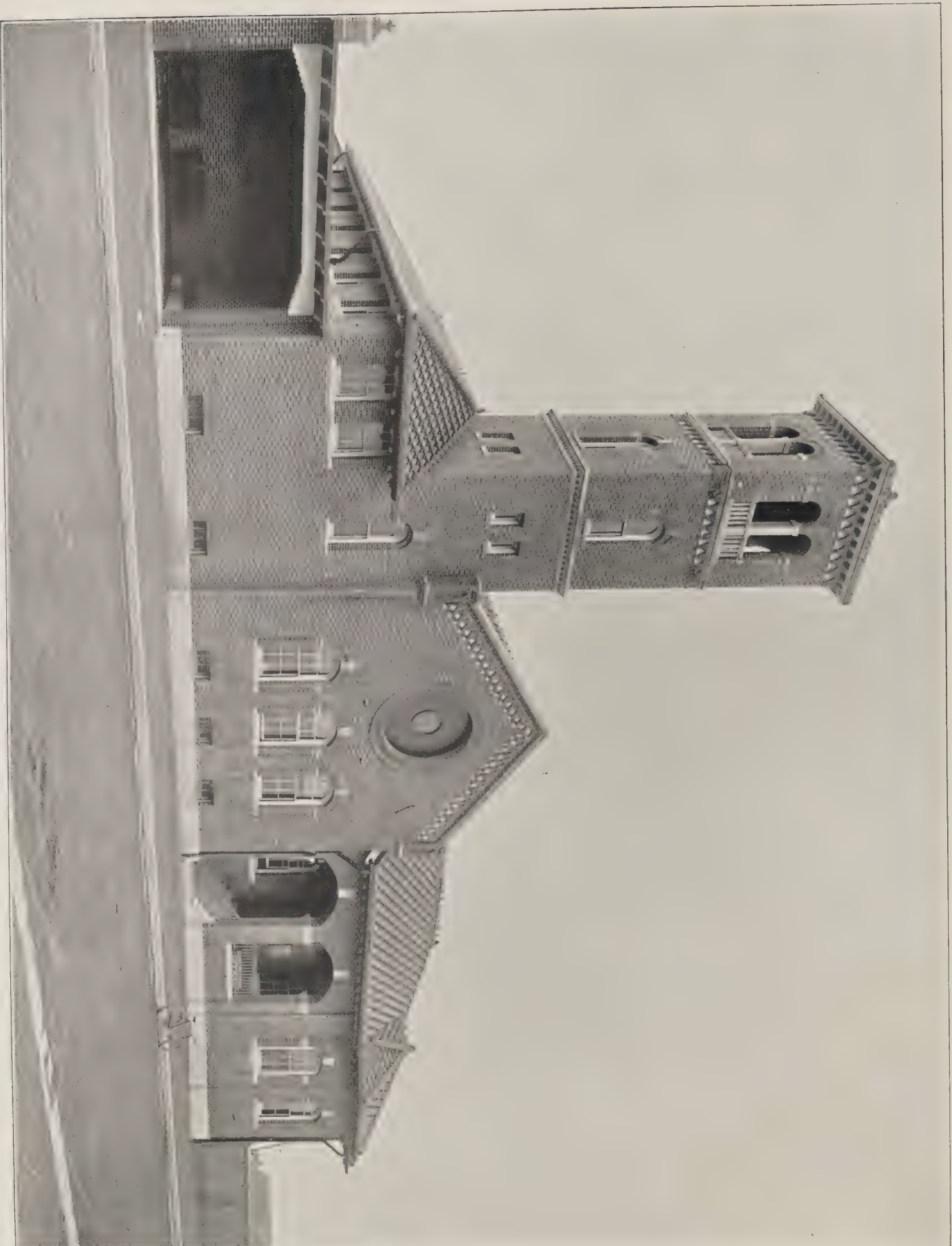
FIRST FLOOR PLAN.



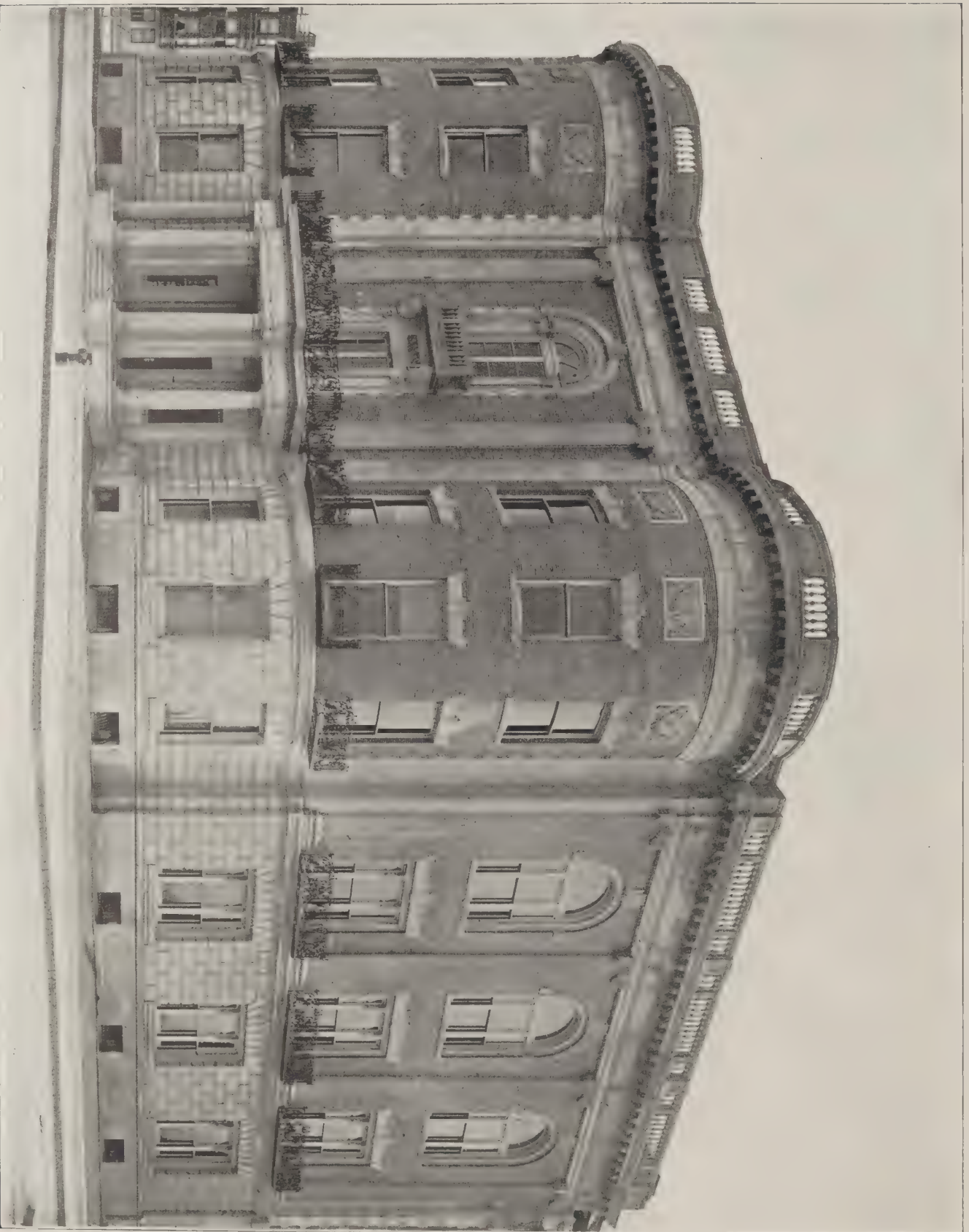
SECOND FLOOR PLAN.

DORMITORY FOR THE UNIVERSITY OF THE CITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY.

MCKIM, MEAD & WHITE ARCHT.



ADMINISTRATION BUILDING, BATHING ESTABLISHMENT, REVERE BEACH, MASS.
STICKNEY & AUSTIN, ARCHITECTS.



BUILDING FOR THE MASSACHUSETTS HISTORICAL SOCIETY, FENWAY, BOSTON, MASS.
WHEELWRIGHT & HAVEN ARCHITECTS.



HOUSE, DREXEL BOULEVARD, CHICAGO, ILL.

HOLABIRD & ROCHE, ARCHITECTS.

C694



DORMITORY FOR THE UNIVERSITY OF THE CITY OF NEW YORK, UNIVERSITY HEIGHTS, NEW YORK CITY.

McKIM, MEAD & WHITE, ARCHITECTS.





COURT YARD.

MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

THE BRICKBUILDER,
MARCH,
1900.



SHOWING DETAIL OF BRICKWORK.

MUSEUM OF SCIENCE AND ART, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
 COPE & STEWARDSON, FRANK MILES DAY & BRO., WILSON EYRE, JR., ASSOCIATED ARCHITECTS.

THE BRICKBUILDER,

APRIL,

1900.



TOWN OF POZZUOLI, NEAR NAPLES, ITALY.

VOL. 9
NO. 4

THE BRICKBUILDER

APRIL
1900

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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Brick	III	Machinery	IV
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Advertisements will be printed on cover pages only.

UNSOLVED PROBLEMS.

ALTHOUGH architecture is approaching the condition where it can be called an exact science as well as an art, there are many unsolved problems which in the absorbing study of modern commercial exactions have remained quite beyond our reach. The average architect has little time for speculative experiments, to say nothing of the general absence of spare cash which thorough investigation requires, but it is to be hoped that some architect will arrive ere long with a sufficiently persuasive tongue to influence some of our millionaires to dispose of their surplus shekels in such manner as to enable at least a few of these long-desired investigations to be brought about. For instance, our actual knowledge of the strength of brick masonry is by no means in the shape it might be put if experiments could be made upon piers of large area. This would require a testing machine of capacity far in excess of anything at present in existence. As to terra-cotta, the data of strength either for structural or ornamental work is very meager. Regarding steel construction, which ought to be most scientifically exact in its data, there is a large field for investigation. We are pretty well posted regarding the strength of beams, girders, and trusses, but we know comparatively little of how columns will behave when loaded to destruction, and no one can say with positive conviction what the life of a piece of steel will be when put into a building. Furthermore, we know that under

some conditions steel will undergo some form of atomic modification, becoming crystalline as a result of repeated shocks to an extent which renders it unsuitable for reliance in building. Here again is a promising direction for investigation. Then there is the vast field of acoustics, in which Professor Sabin has labored most industriously and with most excellent results as far as he is able to go. In fact, if it were possible to establish an architectural testing laboratory, not as an adjunct of some school but to take up the very questions that are beyond ordinary school training, and this laboratory were endowed with sufficient funds to give it an income of forty or fifty thousand dollars a year, every cent of that income could be expended in a manner that would be of the utmost profit to the profession, that would result in more exact methods of construction and a greater degree of success in all that has to do with the engineering problems of the profession.

OUR attention was recently called to an excellent illustration of the changes which have come about in methods of modern construction. On one side of a street a modern, steel cage, eleven-story structure was lifting itself by leaps and bounds from the curb level; on the other side an old-fashioned, commercial warehouse, after a short but hard life of less than twenty years, was being torn down. The work was being done on both sides of the street by the same contractor who, it happened, erected the old structure some years ago. A dispute arose as to the necessity of having all the column connections in the modern building thoroughly riveted, and reference was made to the older building in which the columns supporting the floors were made of cast iron, and simply placed upon one another without being bolted together, or in any way made solid at the joints, notwithstanding which the building had stood with perfect security and had given reasonable satisfaction during a long period of years. If the proof of the pudding is in the eating, it could be argued from this that our modern methods are unnecessarily exacting, and call for an amount of care in certain details which do not tend to make the building any stronger, and which could be omitted with profit to the pocket of the owner. Although the tendency of the theoretically scientific constructor is doubtless to over-construct, it is nevertheless a safe fault, and though former styles of buildings may seem justified by their endurance it is worth something to be able to construct scientifically and intelligently, and to know just what we can count on. There probably never was a time when building cost more than it does at present; also there has never been a time when, on the whole, buildings could be constructed so well, so

thoroughly, and so in accordance with known conditions; and the fact that the older buildings stood fast without the safeguards and wide margins which we now consider at least advisable does not prove that they were necessarily right either in principle or in practice, but simply that our forbears took risks of which our present scientific knowledge tells us to beware.

THE statutes of nearly all our large cities prescribe that chimney flues shall be built with walls of a minimum thickness of 8 ins., or with 4 ins. of brick and a lining of terra-cotta. It is very generally admitted that the lining is a great safeguard and makes, in every way, a more serviceable flue, but when used in connection with fireplaces there is one weak point in the construction which has not received the attention it deserves. It is very seldom that the flue linings can be carried straight from the top of the fireplace to the roof without a bend. At present these bends have to be made by cutting and fitting more or less awkwardly the lengths of flue lining; also, it is not practicable to carry the lining down to the firebox of the fireplace. The side walls above the throat have to be drawn in gradually, with the result that at the point where the combustion creates the greatest heat the walls of the chimney are generally only 4 ins. thick, the lining beginning at some distance above the throat. If the 4-in. walls are properly cemented on the inside the construction is of course reasonably safe; but some enterprising terra-cotta manufacturer ought to be ready to put on the market a form of throat which would carry the lining clear down to the firebox, and would also allow of certain latitude in the way of bends by which the lining would be complete from the damper to the chimney top.

EDITORIAL NOTES.

There is still some discussion and difference of opinion as to whether consolidation has benefited New York. It is safe to say that when the question was presented to the people for ratification the prevailing and predominating influence which secured that result was one of sentiment. The idea of bigness was attractive, and probably little thought was given by the majority of voters to any other consideration. In the light of experience we are obliged to admit some serious defects and objections, most of which can be remedied, the most serious being the large increase in taxation upon the island of Manhattan, amounting to about \$6,000,000, and caused mainly by the substitution of an expensive form of government for the suburban boroughs instead of the simple form heretofore prevailing. However, the city is well off financially, and these matters will adjust themselves in time.

The event of the month just passed was the official beginning of the great underground rapid transit tunnel in New York City, which is to cost \$35,000,000. An elaborate ceremony marked the digging of the first spadeful of earth by the mayor, which took place in City Hall Park before a vast crowd of enthusiastic New Yorkers. The park was gaily decorated in honor of the

event, bands played, and speeches were made. "To Harlem in fifteen minutes" is the watchword, and the impression given by the press comments would lead one to believe that in the consummation of that worthy object lies the key to New York's future prosperity and success. It certainly will greatly facilitate the comfort of those unfortunates who now live in Harlem, or beyond, and who are dependent upon the elevated roads. One of the most difficult problems which the contractor will have to solve is the building of the loop around the post-office. This is one of the busiest and most congested of the city's thoroughfares, and in spite of the great width of Park Row the building of the tunnel will have to go on without disturbing the surface traffic. The magnitude of this undertaking will be realized when one considers that the tunnel will be made deeper here than in any other part, as room must be made for two layers of tracks, one over the other, and great care must be taken not to weaken in any way the foundations of the sky scrapers adjoining, one of them being the famous Park Row Building, the tallest office building in the world, which will be within forty feet of the tunnel.

The thirteenth annual exhibition of the Chicago Architectural Club, which was formally opened at the Art Institute on Tuesday evening, March 20, was in several respects the best one yet held by that vigorous organization. The union of architectural clubs in the newly formed league enabled the local club to exhibit an interesting lot of foreign drawings and photographs secured for the circuit of exhibitions; and owing to the activity of the Improved Housing Association, in conjunction with the club, Chicagoans had the privilege of studying a remarkably complete and comprehensive exhibition, setting forth the housing problem as it exists in the principal American and European cities to-day, and showing how and to what extent it has already been solved. Other special and noteworthy features were plans, drawings, and photographs of several social settlement buildings in Chicago; a new type of church planned as a social, educational, and recreative, as well as a religious center; a series of designs for modern farmhouses, and a model, furnished, full-sized tenement house interior of two rooms, built and completely furnished by the Arts and Crafts Society. The exhibition was catalogued in the "Book of the Exhibition of 1900," which marked the beginning of a new departure in architectural catalogue publication. The heavy expense of publishing this richly illustrated volume was met by subscriptions from a large number of patrons, and all advertising matter was eliminated. Room was thus made for a number of short articles on the most virile problems confronting architects in American cities at the end of the century, and with particular reference to the needs of Chicago.

To attempt to describe in detail the exhibit, or even a single room, in this brief notice, would be scarcely fair to the dozens of well-known designers and skilful draughtsmen whose works made the principal rooms a glow of rich color.

While for purposes of reproduction perspective drawings in line or monochrome will always be made in considerable numbers, we are glad to note that there is an

ever-growing use of color as a medium for expressing architectural ideas.

It is to be noted with pleasure in view of the exceptionally practical bearing of the special features of this exhibition upon problems of immediate and deep public concern that the attendance during the two weeks was large. Such an opportunity for studying the problems of better housing and other important civic improvements is not likely to occur soon again, particularly as it was offered in connection with the series of conferences held during the first week in Fullerton Hall under the auspices of the Chicago Improved Housing Association.

BRICKBUILDER COMPETITION. II.

COZY CORNER AND FIREPLACE IN THE LIBRARY.

PROGRAM.

A FIREPLACE is to be built at one end of a library, the room itself measuring approximately 16 ft. wide and 20 ft. long, the whole of one end being given up to a chimney corner. The chimney will be on the outside of the house and may project into the room, or be made flush with the plastering, as preferred. Windows may be in the end wall on either side of the fireplace, or on the right wall facing the same, as desired. The height of story in the main room is assumed to be 10 ft., 6 ins. in the clear. This height may be reduced in the chimney recess. It is proposed to provide seats on each side of the fireplace, with bookcases over the same built into the wall, and the opening of the fireplace itself should be not less than 4 ft. wide and 2 ft., 6 ins. high. The main walls of the library are to be finished with a paneled dado carried to a height of 4 ft. and a molded wooden cornice measuring 8 ins. on the wall and 12 ins. on the ceiling, the remaining wall space being covered with leather. It is further assumed that the finish throughout will be of dark-stained oak. The floor will be of quartered oak. As the owner of the house is supposed to be Bohemian by inclination, a picturesque rather than a set treatment is desired, and there should be ample opportunity for display of mugs, pipes, rare volumes, etc. The fireplace, the facing, the hearth, and the mantel are to be designed for the use of brick and terra-cotta.

DRAWINGS REQUIRED: A perspective sketch design, in one corner of which on the same sheet is to be a sketch plan not necessarily to scale. The drawing is to be in black ink with no wash work, upon a sheet measuring 15½ ins. wide by 10 ins. high. Each drawing is to be signed by a nom de plume or device, and accompanying the same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before June 1, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Mr. George D. Mason, of Detroit, has kindly consented to judge and criticize this competition.

THE TOWN OF POZZUOLI, NEAR NAPLES.

AMONG the many fascinating localities which border on the wonderful Bay of Naples, none possess more historical interest than the town of Pozzuoli, distant about eight miles from Naples itself. In ancient times the place was known as Puteoli, and is mentioned in the New Testament as the spot where St. Paul landed in Italy after the eventful voyage in which he was shipwrecked. It is doubtful if its general appearance is much different now from what it was at that time. The houses are of the white, square, flat-topped architecture familiar to Mediterranean travelers, and border on narrow and excessively dirty streets filled with a dense population, which under the brilliant Italian sky and mild southern climate cooks, eats, performs its toilet, and all but dwells entirely on the rough pavement.

Beggars swarm in unexpected hordes even in that land of recognized mendicancy, and the writer recalls that during his visit he was followed by a procession of suppliants which at no time numbered less than fifteen men and boys, until one was engaged at a definite salary to drive the others away.

The view taken from the rising ground to the northwest of the town shows in the foreground the remarkable ruins of the ancient, so-called, Temple of Serapis, which may, however, have been a market hall, like the Macellum at Pompeii. The three standing columns belong to a portico which originally had six, carrying a splendid frieze. There was also a square court enclosed by forty-eight massive columns, in the center of which stood a circular temple, the pillars of which have been transferred to the palace at Caserta. The most interesting fact about the ruins is the unusual experience which they have undergone. Originally, of course, the temple stood on solid ground at some distance from the water's edge, which the ancient water marks show to have receded considerably. Subsequently, an eruption of the Solfatara buried the lower part of the edifice to a depth of 13 ft. Then by a subsidence of the earth's crust the entire region sank for centuries below the level of the sea. During this period a species of shellfish attacked the exposed middle portions of the columns, while the bases covered with rubbish remained intact. These borings are plainly visible on the columns and indicate that the sea level at one period must have been at least 20 ft. higher than at present. By another convulsion the territory was again upheaved from the sea, and the ruins are now, as the view shows, at an apparently safe distance inland, though it is said the ground is again gradually sinking. Within the enclosure, the soil of which is still wet and treacherous, are collected a large number of antique fragments. The view also shows the remains of the ancient mole built by the Romans.

Pozzuoli is further distinguished by possessing a Roman amphitheater of the first order, 369 ft. long, which, although having had the upper portions dismantled, still exhibits the underground arrangements for giving spectacles, and the dens and air holes for the animals, in a better state of preservation than any other amphitheater. By means of a water conduit the arena could be flooded and naval combats could be represented, and during the gladiatorial contests it is said that Nero himself entered the arena here.

The Brickwork of Southern France.

BY WALTER H. KILHAM.

THE architectural traveler on the road to Spain, who reaches the frontier by the main line of railway passing through Bordeaux, will miss a series of inland towns containing an interesting lot of brick buildings, which, while they do not compare in point of delicacy or refinement with those of northern Italy, yet present many points worthy of observation, if not of study. Leaving the main line and traveling *via* Perigueux, Agen, Moissac, Toulouse, and Pau, this brick region lying in the valley of the Garonne will be traversed and a good deal of remarkable natural scenery encountered as well. In fact, the bit of country through which the railway passes from Perigueux to Agen, along the valleys of the Dordogne, Vézère, Lot, and Garonne, is about as picturesque as anything that could be conceived, and appears to be utterly unworked by the photographer.

The line follows the river valleys between high cliffs of limestone worn into all sorts of curious shapes. The hillside villages, with clusters of low-roofed houses and square campaniles rising in the midst, are exactly like the hill towns of Italy, except that frequently there are little tourelles or steep gables which add a dash of French piquancy to the level eave lines of the buildings.

Agen, a sleepy southern town of twenty thousand in-



COURTYARD OF HOTEL D'ASSEZAT, TOULOUSE.

habitants, with grass grown squares and deeply arcaded streets, offers no great architectural attractions; but Moissac, a little further on, is well worth a stop for the

sake of seeing the famous cloisters, which are notable not only for their curious and remarkably carved capitals and refreshing greensward, but for the fact that the walls



COURT OF LYCEE, TOULOUSE.

are of brick with molded brick arches. The cloister dates from 1100-1108, and is one of the finest in France. The arches, which are very slightly pointed, rest alternately on single and clustered columns, the capitals of which are embellished with scenes explained by inscriptions as well as by foliage and carved animals. The church is also of brick, and the cavernous portal conceals an interesting and elaborately carved doorway of the twelfth century. Moissac is a hot, dirty little place, with diabolical pavements of sharp stones and old, square, Italian-looking brick or plastered houses, with widely projecting eaves, a paradise for a colorist, for the red brick has everywhere aged to a most gorgeous hue.

This part of Languedoc appears to be about the only section of France where the use of stone is almost completely lacking in the buildings of the thirteenth and fourteenth centuries, the architects of which employed it only for mullions, columns, and trimmings. Besides the buildings at Toulouse, Viollet-le-Duc cites the bridge at Montauban, the Cathedral of Albi, the churches of Moissac and Lombez, the tower of Caussade, etc. The bricks are of rather large size and almost square, measuring some 9 by 13 ins. The beds of mortar in the older work are frequently nearly as thick as the bricks. Molded brick was not employed to any great extent, as the brick of Languedoc being rather soft, the builders preferred to cut it, or they obtained their effect by different modes of placing the square edged bricks.

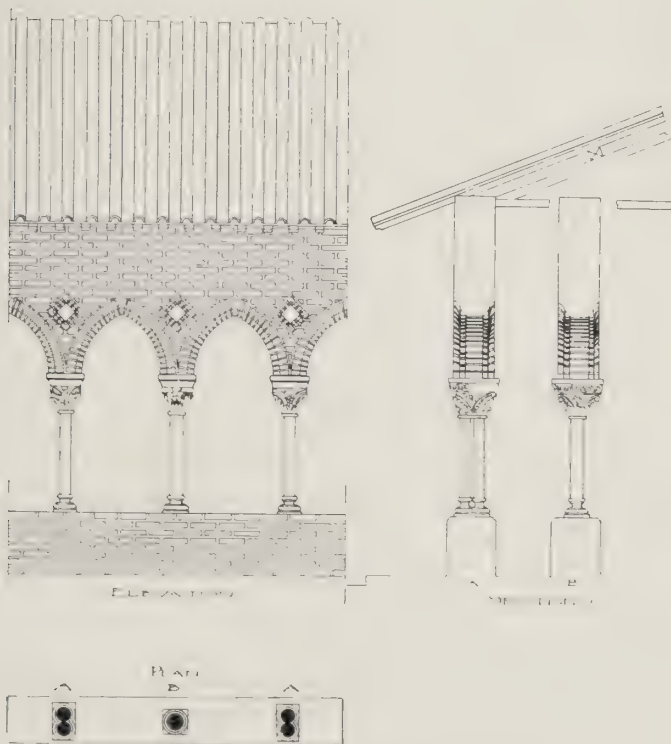
The bridge at Montauban, not far from Moissac, is

really one of the finest Gothic monuments ever done in brickwork. It was commenced in 1303 under Philippe le Bel who had come to Toulouse to settle some feudal



CLOISTER OF THE MUSEUM AND OLD BRICK TOWER,
TOULOUSE.

quarrels. In according a subvention to the consuls of Montauban, he imposed the condition that they should build on the bridge three good and strong towers "of which he would retain the ownership and keeping." Two of these towers were at the extremities and the third in



DETAILS OF CLOISTER AT MOISSAC.

the middle, which also contained a chapel dedicated to St. Catherine. The bridge was also furnished with a tilting timber which carried an iron cage for plunging blasphemers into the waters of the Tarn. The great height (54 ft.) and length (over 750 ft.) of this structure make it one of the most important remaining monuments of its time. The three towers have disappeared, but its seven sturdy arches still carry the traffic of the city as well as ever. The bridge is built entirely of bricks of dimensions somewhat larger than those given above.

Toulouse lies flatly in the valley of the Garonne. Baedeker announces gloomily that its excessive heat and violent winds make it a fatiguing place to visit. The streets are generally badly paved and tortuous, but it has



CHURCH DOOR, TOULOUSE.

one fine thoroughfare, the Rue Alsace-Lorraine, which has exactly the appearance of a section of Paris transported bodily to the Midi. Good hotels at least are found at Toulouse, and form an agreeable innovation, for the "*vieilles auberges de France*," which thrive in the smaller towns, though picturesque, are generally more remarkable for their surprising accumulations of dirt than for any particular attention paid to the traveler's comfort. Toulouse is a large place, and reminds one somewhat of Milan without having as amusing a population. Besides its splendid church of St. Sernin, so well known to architectural students, it has a good many old brick mansions, with courtyards and arcades quite in the Italian manner. Such is the Hôtel d'Assezat of the sixteenth century, with its rows of arcades and corner stairway tower, another

Tolosan peculiarity. Another very interesting feature of the Renaissance work at Toulouse is the employment of caryatids around the windows, both on the frames and mullions as in the court of the Hôtel du Vieux-Raisin. A vein of Spanish or even of almost Moorish feeling appears to run through some of the earlier work, such as the façade of the Lycée and the church portal shown in the illustration with their enclosing borders; while the early Renaissance details of the court of the Lycée bear a very close resemblance to the corresponding work beyond the Pyrenees. This building is interesting as having been the house of Bernuy, a Spanish merchant, who guaranteed the ransom of Francis I. for two millions of francs after his capture at the battle of Pavia.

The Hôtel de Ville, or "Capitole," as it is called, is a building of brick and stone, in the styles of different periods, of no great merit as a whole, but with occasional interesting details. In addition to providing accommodations to the municipal government, it is the seat of the *Académie des Jeux Floraux*, a literary institution dating from 1323, which annually distributes flowers of gold and silver to its laureates.

The distinctly Tolosan style of architecture is shown in the octagonal brick towers built toward the end of the thirteenth century, which consist of several stories of *triangular*, not circular, headed openings. These openings may be said only by courtesy to be arched, as the bricks

one shape of bricks and was not able to have radial bricks made for the arches. It appears, however, that the colonnettes at the corners of the towers are cylindrical and



FACADE OF LYCEE, TOULOUSE.

are simply set in rows and leaned together, without radial joints. It is evident that this arrangement was brought about by the material available. The architect had only



WINDOWS OF HOTEL DU VIEUX-RAISIN, TOULOUSE.

that the bricks were molded expressly for them, and some of the towers possess also small circular arches molded and with radial joints. These towers were not commonly crowned with a *flèche*. The tympanums of the arches are pierced with lozenge-shaped openings. The gargoyles and capitals are in stone. The towers are generally rather thick for their height, and diminish slightly story by story, and are not ineffective, though the style would scarcely be thought agreeable enough for general adoption.

St. Sernin itself possesses a fine tower of this type, 210 ft. high, consisting of five stories of arcades, surmounted by a spire. Only the two upper stories have triangular arches, the others being more nearly Romanesque in detail. Although this church is built largely of brick, it cannot be classed exactly as a type of brickwork, because most of the detail of the building proper is done in stone.

The museum of Toulouse, which occupies the old Augustine Convent of which the cloisters are shown in the accompanying photograph, is one of the fullest collections in France, and is especially rich in antiquities and pictures. Altogether the old city with its exciting history of civil and religious struggles extending over two thousand years has a distinct individuality which manifests itself as clearly in its peculiar architecture, as it does in the habits and institutions of its people.

Brickwork in the Royal Châteaux of France. I.

BY WILLIAM T. PARTRIDGE.

IN a series of small châteaux it was not difficult to trace those differences in form and detail that the changes in taste and in methods of living from period to period



CHATEAU DE GIEN.

demanded. Such a series, when arranged chronologically, is seen to form a sort of evolution, each type retaining some form or characteristic—sometimes merely as ornament—of an earlier period.

To illustrate: The corner towers of the fortress were retained in the château, but became in time little corbelled turrets useful only as lookouts or posts for sentries—a sort of rudimentary feature. In most instances each of these corner towers contained a square room,—square, that is, on the interior for some constructional reason, although it was circular without. Later, this square form appeared on the exterior as well. The square corner tower developed along two distinct lines. In the one case it diminished to a small turret or a low wing; in the other it grew into a high-roofed pavilion.

Now, where the building is for the most part the work of a single mind and was constructed with little or no delay, all such features can be traced easily. When, however, the period of construction covered a considerable space of time, as in the case of the larger châteaux, the wings and additions built at different periods and of different materials show great variations in style, and were influenced in design by the irregularities of site. Therefore, it becomes difficult in this present survey to trace the development of any particular feature.

Of the larger châteaux Gien is the only

one built of one material and completed in its present form under one builder. The material is brick. The other large châteaux employ brick in a wing or gallery only. Of the earlier royal châteaux, for example, Blois and Fontainebleau have each a wing and gallery. St. Germain-en-Lay shows some exposed brickwork on the exterior and a great amount within. Versailles, of later date, was built by Louis XIII. entirely of brick and stone, but it was altered by Mansard. Gien, entirely of brick, and Maintenon, with brick wing and tower, employ the largest amount of that material. Of these Gien has been mentioned in a previous article as illustrating the great variety of diapers and patterns introduced in the brickwork.

Though never an actual abode of royalty, this château, Gien, can be classed as a royal château if only in point of size. Indeed, it is the largest brick construction among them. Its length is over 250 ft.

Gien was built in the latter part of the fifteenth century. In plan it is the shape of the letter L—doubtless replacing an older building, the thick walls of which still remain in the interior.

Modern alterations have somewhat changed the plan, but the general type of a Gothic palace is still traceable.

A series of rooms connected by corridors is interrupted by a large hall or guard room. Staircases at the extremities of the corridors give access to the stories above. The corridors are enclosed, a fact



COURT FACADE,
CHAPEL OF THE CHATEAU DE BLOIS.

which leads us to suppose that a courtyard was not considered in the original plan; for in nearly all buildings of this period an open arcade is used as a communication on the court side.

The composition of the inner—one cannot say “the court”—façade is very simple. The main interest is concentrated on the staircase towers, which are most picturesque.

Some idea of the great variety of diaper ornament, as well as other forms used here, can be seen upon the smaller angle tower. Triangles, squares, and circles run riot over the façade and give an air of gaiety which no other material than brick permits.

If Gien barely deserves a place among the royal châteaux, Blois is, on the contrary, the most famous of

brick court but a fragment remains,—a gallery on the side of the chapel. Mansard destroyed the rest. The general motive, an open gallery terminated by staircase towers, Louis XII. preserved in the court side of his wing. The best view of this part of the château is obtained from the end of the court. The material, brick, contrasting with the stone, and the concentration of ornament in certain bands and spots are so effective that the adjoining elaborate staircase and façade of Francis I. suffer in comparison.

The architectural problem of the builders was to construct a series of rooms between two existing buildings, and to penetrate this group with an opening large enough to admit a mounted escort.

The solution was to unite the series by means of a gallery on the first floor open to the court, and to super-



FACADE, CHATEAU DE BLOIS.

them all. It was the last royal palace in its style, and the best.

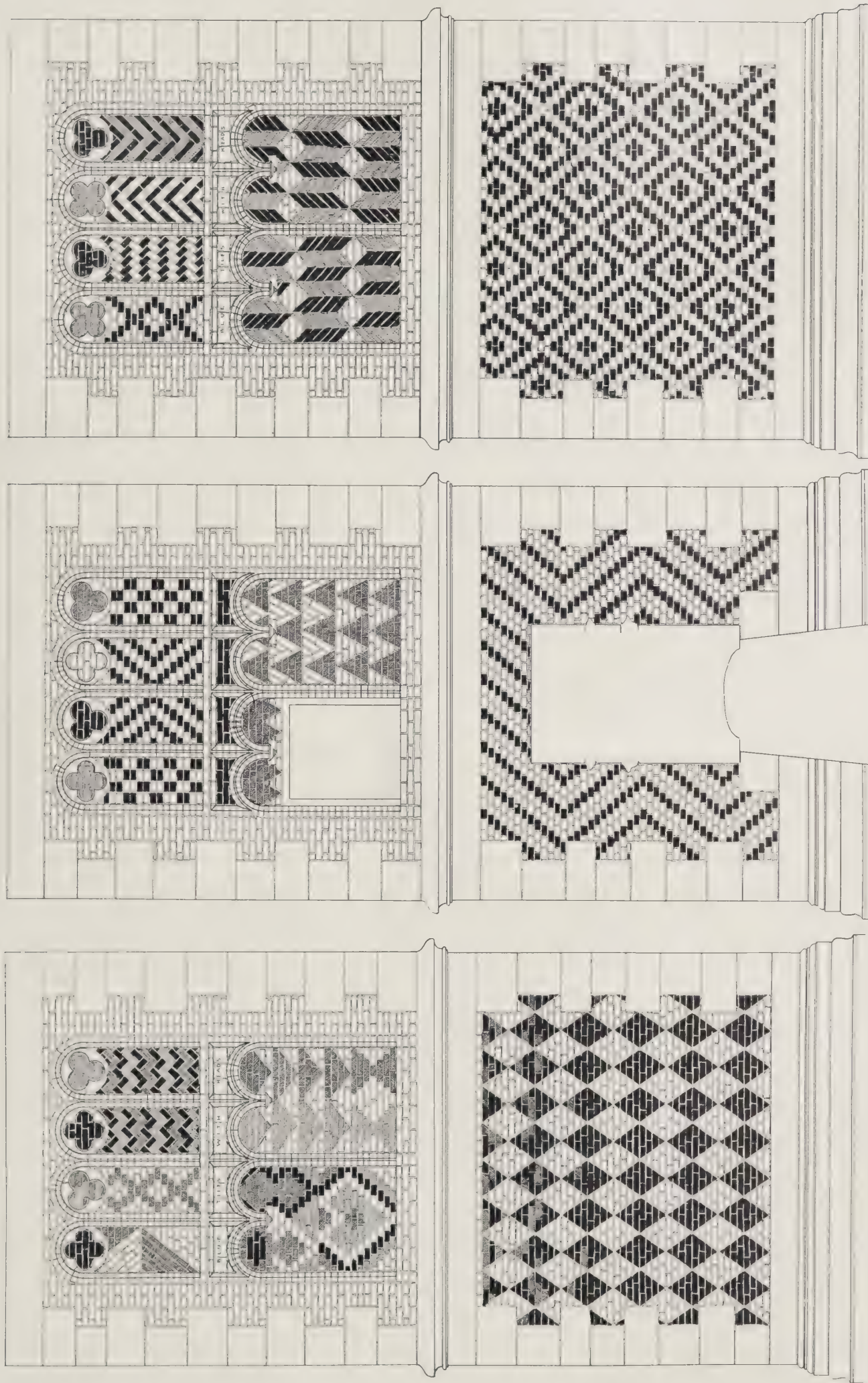
The influence of Italy had shown itself some time before this, but the conservatism of Anne of Brittany is said to have resisted the employment of workmen trained in that school. Certainly, there is less detail of the Renaissance in the wing built by Louis XII. than in any of its contemporary buildings. It stands quite free from classic traditions and represents the highest point of Gothic domestic work.

This brick wing was built in the latter part of the fifteenth century in order to unite the chapel of the château and the *salle des états*, a large council chamber. This construction continued the brick building of Charles VIII., and made three sides of the court a dark setting for the elaborate stone façade of Francis I. Of two sides of this

impose a closed corridor. The staircases terminating this construction on the court side give access to the different levels.

The entrance is in plan a transverse gallery considerably off the center of the wing. Its position is due to the existence of an old vaulted *salle des gardes*, to the left,—from the court side. The gallery is marked on the court side by the increased width of the opposite arcade. This façade on the court is one of the most attractive compositions in French architecture.

The rich, horizontal bands of cornice, sill-course, and string-course are penetrated—not broken—by the vertical members or pilasters extending from the capitals of the arcade piers to the cornice. Every alternate bay formed by these vertical members is penetrated by a mullioned window in the second story and crowned by a



DETAIL OF BRICKWORK, COLOMBIER AT BOOS, FRANCE. WILL S. ALDRICH, DEL.



COURT FACADE AND STAIRCASE TOWER, CHATEAU DE BLOIS.

dormer above. The lines of the mullion and jamb are carried down, literally through the sill,

for they penetrate it, — and die in the steep, pitched surface of the string-course. A small traceried balustrade runs between the gabled dormers. The entrance arch scarcely disturbs the equal divisions of the bays, its extra width is so cleverly adjusted.

The principal staircase tower is most picturesque. The little staircase turret adds much to this quality; it gives access from the attic of the main building to a kind of secret chamber in the roof of the tower.

The brickwork of this part of the court adds the great charm of color to a most interesting composition. It is laid in Flemish bond in the body of the building and in alternate courses of leaders and stretchers in the tower. The panels of the vault of the tower, the background of the arcade, are also in brick.

The exterior façade is formed into a series of large, nearly square panels by the intersections of cornice and

string-course with vertical pilasters. These pilasters are a logical expression of an inner wall, a kind of flat buttress in fact. They are spaced about equal distances apart; but for some unknown reason, not a single bay of windows occupies the middle of a space, though where they break through the roof the dormers are nearly equal distances apart.

For those endeavoring to find some solution to this perplexing combination, a window obliterated by the restorer, Duban, is dotted on the photograph shown here. The classic mind is shocked by a buttress's coming over an opening; without doubt Duban improved the façade when he walled it up. Happy privilege to better an original!

If the entrance on the interior is skilfully concealed, it is here as strongly emphasized. A portion of the old *salle des gardes*, dictating its one-sided position, is seen to the right of the picture. The recessed niche and rich canopy, the small door for foot-passengers, the balcony and little window below, though irregularly placed, are so entrancing individually that a criticism of their combination is impossible.

The brickwork on the exterior is laid with a diaper pattern in darker brick; the broad wall surfaces give masses of splendid color. The bond is laid with headers except for two stretchers in a diaper, as can be seen on close inspection. So happily have brick and stone been used here at Blois that the chateau has set a precedent for all lands. Some of the most attractive houses in this country owe their real charm to the architect of this last

—and may we not say best? — Gothic chateau.



CHAPEL OF THE CHATEAU DE BLOIS.

Church Architecture in Materials of Clay.

SO far, the examples of church architecture, with which we have sought to illustrate this subject, have been confined to work of a Gothic character. There are many others that would have served equally well as types of

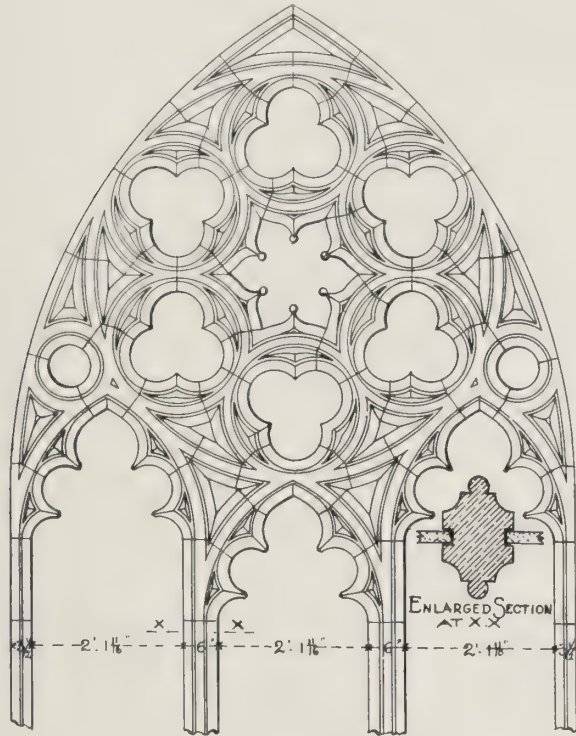


FIG. 19.

the class to which they belong, which must, at present, remain in abeyance. One of these was built some ten years ago under rather unfavorable auspices, and so cannot be judged by the high standard that now prevails in work executed by those who have, at least, learned to avoid the errors of their predecessors. In it, the tracery windows—of which there are a great number—were made in two thicknesses, with a joint at the glass groove, the two halves being cemented together after burning. This, be it remembered, was not the work of an amateur, but of one from whom better things might have been expected had not egotism and perversity rendered him intolerant of every opinion save his own, and hostile to every suggestion that did not originate with himself. Yet, next to patience and perseverance, experience is perhaps the most valuable commodity in the entire stock-in-trade of a terra-cotta manufacturer. The crude, unworkmanlike method of procedure just referred to would not have been tolerated by the architect had he insisted upon knowing the whys and wherefores of such an expedient. Double-faced work had often been made in the solid without special difficulty, and this, we believe, has long been the rule rather than the exception among competent clay-workers. The few illustrations of similar work that have been given prove conclusively that it was quite unnecessary; further, that instead of effecting any saving it must have greatly increased the cost of manufacture.

Turning to Fig. 19, a window similar in design to some of those in the building alluded to, is jointed in what we

take leave to call a more rational manner. In stone tracery the interior half of the bar is often left plain; or, if molded, some of the members cut on the outside are omitted on the inside with a view to economy. In terra-cotta this consideration would hardly apply; or, if it did, it would lead to a distinctly opposite conclusion. Leaving the bars plain on the inside, or molding them to an apparently less expensive section, would certainly increase rather than diminish the cost of production. Separate models and molds would then be required for nearly all the pieces in the window above the springing line, an exception to this being the six central pieces, which would follow each other around without having to be reversed. All the others, however, would become right and left counterparts, thus creating double the number of different shapes, no two of them being interchangeable. In stone, where all the moldings must be cut by hand, this diversity of shape would not greatly matter, and the simpler profile on the inside would, of course, entail less labor. But in terra-cotta these conditions are reversed; for the duplicated profile admits of the same mold being used for double the number of pieces. For example, if left plain on the inside this window would require thirty-four distinct shapes, above the springing line, out of a total of thirty-nine pieces. With the same section on the inside these shapes would be at once reduced to sixteen, from which number of molds perhaps fifty complete windows could be pressed without the need of a single alteration by hand. There is matter here for the behoof of architects, who, frightened by the cost of stone tracery, rush to the equally needless extreme of a painted imitation in wood.

A very attractive church was erected a few years ago at the junction of Throop Avenue and Thornton Street,



FIG. 20. ALL SAINTS (R. C.) CHURCH, THROOP AVENUE, BROOKLYN, N. Y.
Schickel & Ditmars, Architects



FIG. 21. JUDSON MEMORIAL CHURCH, WASHINGTON SQUARE, NEW YORK.
McKim, Mead & White, Architects.

Brooklyn (Fig. 20). School buildings have since been added, and a rectory now under way may be noticed to the extreme left of the church. This building, when completed, will be worthy of adequate illustration, as a good type of city residence in which the detail indicates its ecclesiastical character, as an adjunct of the church to which it belongs. As one portion of the block is vacant and another occupied by frame dwellings of no great importance, it may be inferred that additional buildings are contemplated. A speckled buff brick with buff terracotta of a slightly lighter tint have been used so far, and the same combination is likely to be adhered to in subsequent operations. Whatever doubts may have been entertained on this point while the project was still on paper, there is now little room for misgivings in view of what has been accomplished. Thus we have in this center of life and activity another proof that the choice of burned clay is no longer regarded as an architectural experiment.

The question of window tracery, to which special attention is directed in a previous paragraph, has in this case been settled by compromise. The more important windows are executed in terra-cotta, while those of aisle and apse are filled—temporarily, we hope—with wood. Beyond this, however, there is but one feature that is really open to adverse comment, that being confined to the framed and slate-covered spire. Had it been carried up in brick with terra-cotta quoins and terminal as in the case of the tower and turrets below, the result would have commanded unqualified approval. So far as can be seen the foundations were equal to the extra load, and the cost of a brick spire need not have exceeded the sum spent on one that seems out of character with an otherwise fine building. The brick spire, illustrated in the second paper of this series (*BRICKBUILDER*, Vol. VIII., page 50), is a convincing example of what can be done in that line at comparatively small outlay, one which we hope to see followed more frequently in future.

The last remark applies to village and suburban churches rather than those situated in the crowded thoroughfares of great cities where the church spire has lost its original significance. We could mention a score or more of famous churches in the Eastern cities, the pride of more than one generation, which have suffered a total eclipse, their spires disappearing from view as each succeeding builder tries to peep over the shoulder of his neighbor. The spire of Trinity, once a landmark on Manhattan Island, has ceased to cast its shadow around that section of the city in which the business habitations of man have soared from seven to an extreme altitude of twenty-nine stories. Since Stanford White posed *Diana* on his revised version of the *Giralda*, the owners of uptown property have vied with each other in a display of the loftiest aspirations. But two blocks distant a well-known church has been hemmed in on two sides and dwarfed into comparative insignificance by a towering office building destined, at no distant date, to swallow the site on which the church now stands. In a little time it will be elbowed or induced to sell out, and follow those who have moved farther afield. In the building and rebuilding of modern cities, even the most sacred institutions are forced into the all-pervading struggle for existence. Spire and campanile can no longer compete with their secular surroundings, and it remains to be seen whether they can be adapted to their environment without loss of dignity.

Something of this kind is suggested by a view of the Judson Memorial Church (Fig. 21), in which every floor of the campanile below the belfry stage is made habitable. That was not so in the Christian basilicas, of which this dignified edifice is a reminder; but there is no law, civil or canonical, against a practice of which this



FIG. 22. WEIGH-HOUSE CHAPEL, DUKE STREET, LONDON, ENGLAND.
Alfred Waterhouse, R. A., Architect.

one may be instanced as a precedent. The situation in this case is unusually favorable, there being an uninterrupted view across Washington Square, with, as yet, no very high buildings in close proximity.

The architecture of this church is peculiarly appropriate to the neighborhood in which it is situated; for the population is largely Italian and French, with not a few nondescript wayfarers from southern Europe. To many of these any form of religious observance must be an almost forgotten memory. But with this bit of Roman architecture in view they will have a reminder that may appeal to their national if not to their devotional sympathies. That fine campanile must be familiar to all Italians, especially those acquainted with Rome and Florence. One thing they will miss: the vacant putlog holes in which some of our most eminent architects have discovered certain beauties that were never thought of by those who forgot to fill them before the scaffolding was removed. The scars of age or honorable service most people can admire, but these should not be confounded with mere oversights in an incompleting building, due to wars, revolutions, a depleted treasury, or the waning enthusiasm of successive builders.

This, moreover, is a brick and terra-cotta church, such as is common in Milan, Bologna, and most towns of northern Italy. Even the shape and size of the bricks are "Pompeian," a further compliment to the buried suburb at which many of the patricians resided, and the resting place wherein their remains mingle with mounds of volcanic ashes. The terra-cotta, however, is a light gray, instead of the red that prevails in Italy, but it is used in much the same way as the marble at Siena, Orvieto, etc. The group to the right, built of the same unexceptionable material, is an integral part of a very harmonious establishment. The horizontal bands that alternate with brick coursing in the basement have, perhaps, a little too much projection, while the slight surface guilloche on the face might have been more pronounced. The joints in the raking cornice of gable are made vertical, instead of being at right angles to the pitch of roof, an innovation for which there may have been ample justification. With these comparatively trivial exceptions, the Judson Memorial may be set down as one of our most successful examples of church architecture in materials of clay.

Among nineteenth century adaptations of late Norman and Romanesque architecture, the Weigh-house Chapel, Duke Street, London (Fig. 22), is entitled to more than the passing notice which, however, must now suffice. A general view of this vigorous picturesque composition appeared in connection with other notable examples of terra-cotta designed by Alfred Waterhouse, R. A. (*THE BRICKBUILDER*, June, 1896, page 144). With the exception of the steps leading to the several entrances, this church is brick and terra-cotta throughout; so also is the groined vestibule and much of the interior. There are many features in the design that are strikingly characteristic of the distinguished architect under whose direction it was erected. Studied to the minutest detail, it affords abundant proof of his close acquaintance with the material which he had intended to use in its construction. Not only is this true of that which has been done, but equally so of many things that have been deliberately



FIG. 23. CHRIST CHURCH, 71ST STREET AND BROADWAY, NEW YORK.
C. C. Haight, Architect.

avoided. These negative qualities may not catch the eye of a casual observer, but they must be very obvious to those who have had much to do with the manipulation of clay for architectural purposes. They show that his conception of an architect's duty is not merely that of an imaginative draughtsman whose pencil follows where fancy points the way, without serious thought as to consequences, financial or otherwise. To an undoubted genius as an artist, he has harnessed experience on the one side and common sense on the other, — a somewhat rare combination, but one that enables him to spend his clients' money to advantage, and at the same time retain the good opinion of reputable contractors, none other being entrusted with the execution of his designs.

Another very pleasing, though altogether different rendering of Romanesque has been selected from a number, all of them worthy of illustration (Fig. 23). It happened to be built about the time when so many American architects were following the lead of the late H. H. Richardson, with varying success; yet it is not at all typical of the style which he had sought to introduce. This is a frank and, on the whole, successful adaptation of mediæval architecture from northern Italy, doing duty under less favorable conditions as to site and surroundings. Suggestions from Chiaravalle and San Gotardo blend admirably with rounded apse and turrets from Pavia, but not so with their neighbor to the right; which, however, being the home of the Colonial Club, can show an equally valid title to existence. About the only thing in common between these two buildings occupying the same block is that burned clay enters largely into both; but even here we have a distinct "color line" which renders them irreconcilable. The latter is cream white; while the church is buff brick and red terra-cotta, to which dark chocolate roofing tiles give a remarkably effective sky-line.

A CORRECTION FOR CALCULATING DIRECT RADIATION.

(HEATING AND VENTILATING OF SCHOOLHOUSES.)
THE BRICKBUILDER for March, 1900.

IN stating the rule for computing the amount of direct radiation required for the heating of halls a divisor of a portion of the results was omitted. The rule as stated reads: "Estimate the area in square feet of the exposed wall surface including windows, of this take one fourth, add to the result the area of glass surface in square feet and three times the volume of the hall in cubic feet." This last line should have read, "three fifty-fifths times the volume of the hall in cubic feet."

The correct statement of the rule would consequently be as follows:

Estimate the area in square feet of the exposed wall surface including windows, of this take one fourth, add to the result the area of glass surface in square feet and three fifty-fifths the volume of the hall in cubic feet. The radiating surface should equal in square feet one fourth the last result.

A few remarks might be made regarding this rule. The rule is founded on the results of scientific experiment, and when stated as a formula would be in general as follows:—

$$R = \frac{1}{4} (G + \frac{1}{4} W + nC),$$

55

in which R equals radiating surface in square feet.

G equals glass surface in square feet.

W equals exposed wall surface, including windows, in square feet.

C equals cubic contents of the room in cubic feet.

n equals number of changes of air in a room per hour.

For halls, *n* is usually to be taken as 3, for living rooms on first floor as 2, and for sleeping rooms in residences on the higher floors as 1. The rule is founded on an average of a large number of experiments made in heating different characters of buildings to 70 degs. in zero weather. It is to be considered as giving average results for usual conditions, and is to be increased or diminished if rooms are especially exposed to high winds, or on the other hand are well sheltered. The rule applies to good building construction, and is subject to modification by variation in building conditions.

In the rule for capacity of a ventilating fan it might be remarked that this rule applies to fans as ordinarily proportioned for ventilating work in which the width is practically one half the external diameter of the fan wheel, and the inlet opening about 60 per cent. of this quantity.

R. C. CARPENTER.

Nothing but the old traditions of the American house builder in favor of wood have kept that material in use so long for what are called fire-proof buildings. It is an anomaly, a monstrous piece of careless indifference, that even in so-called fire-proof buildings there should still be wooden doors, wooden door trims, wooden window sash, wooden paneled backs, wooden dados, and wooden flooring, together with all the outfit of furring strips, stops, grounds, and loose moldings which are needed to complete the job.

Fire-proofing.

"AN UNSCIENTIFIC ENQUIRY INTO FIRE-PROOF BUILDING."

MR. RUSSELL STURGIS has a very timely and interesting article in the *Architectural Record*, which he modestly entitles "An Unscientific Enquiry into Fire-proof Building." He presents a very severe and, it must be admitted, perfectly justified arraignment of our lack of real thorough fire-proofing, and he makes the statement that although in this country we have wealth at our disposal and absolutely unlimited choice of material, there are not twenty buildings in New York in which one may sleep secure. We burn each other alive in large, elegant, and costly modern hotels. As compared with this he cites for example Paris, where in the large majority of houses there is so little combustible material that when fire catches on waving curtains, or a bit of wooden finish, it burns itself out with a flame as brief and hardly hotter than that which one could make from a pile of newspapers. This is without forgetting the lessons of the fire in the Théâtre Français, which created a good deal of damage, and yet those of our readers who have seen photographs of this very building taken since the fire can appreciate how slight was the loss as compared with the results of a fire in a building like the Windsor Hotel, New York. It seems as if all our efforts have been expended in the endeavor to devise a system of construction which was absolutely weak in certain essential structural points as regards resistance to fire, and that instead of making our lines of development proceed from the employment of material which of itself would be incombustible, we continue to use what we know will not stand fire, and then express astonishment that our fire bill is so large.

Mr. Sturgis very justly queries, What is the utility of the resisting powers in the framework of a modern steel structure, if the building, apart from the framework, is so combustible as to be destroyed, or its costly outside to be hopelessly defaced, by a not very formidable conflagration, such as might be caused by the destruction of a building of the old type directly across the street. It is certain that the possibility of a furious and very hot fire attacking such a building from the outside has still to be reckoned with, and against this danger there is nothing to be set up except the substitution of that material which minds heat but little for those materials which cannot resist it for any length of time, together with the substitution inside the building of stuff which will not burn for that which will. The inside finish of our modern fire-proof building is the vital defect which has made possible some of the fires which we have had to encounter. Our windows, our floors, and stairs are often of a kind utterly unsuited to resist even a small local fire, and it has been shown again and again that it is in these directions that fire will spread throughout what we classify as a fire-proof building. Mr. Sturgis truly says that when one has spent two successive winters in an apartment unconscious of the fact that not a square foot of plank existed, and then finds to his surprise that underneath the carpets and rugs there is everywhere mosaic, terrazzo, earthen tile or cement, then he makes progress in the

knowledge of interior fittings. And we have no right to call our buildings fire-proof until we are permitted to leave out of their construction everything which will burn or be influenced by heat to any appreciable extent.

We cannot fully agree with all Mr. Sturgis recommends to fire-proof the conditions. We have yet to find a property owner who is not convinced that an attempt to close the shutters of his offices every night would ruin the building, and of all awkward and unaccommodating forms of shutter, to our mind, the rolling or coiling shutter which Mr. Sturgis seems to favor is the least promising and the least satisfactory. Wire glass, which he advocates, is an excellent possible help in checking the rapidity with which fire will spread in a large building. Mr. Sturgis, however, strikes a responsive chord when he says that the only thing we know which we have a right to call in ordinary parlance proof against fire is burnt clay. He particularly argues against a combination of stone and brick, as there is no reason in the world why terra-cotta should not be used for sills, lintels, jamb-blocks, quoins, architraves, archivolt, coping, pilasters, string-courses, parapets, and the rest, just as much as for the body of the wall. And he does not ignore the artistic side of the question, and claims that there is no fear that a city built entirely of brick and adorned with brick and terra-cotta will be monotonous or ugly. If the people of our time were to brag that they proposed to leave New York a brick-built town, whereas they had found it mainly of marble and brownstone in its exterior aspect, they would be posing wisely. Nor should the owner of a new and costly office building be satisfied unless his architect can say to him, when the last workman leaves the building, "There is not in the building itself, its walls, floors, or fittings of all sorts, as much wood as would make a lead pencil." That is the standard which, in spite of the assurances of a wood which will not burn, each owner and architect should set up for himself.

Mr. Sturgis's plea for the abandonment of wood is one which we all indorse. There have been many devices for rendering wood fire-proof, and while some of these seem to answer every purpose there is a question as to whether they are really reliable. Mr. Sturgis wisely says that wood should be prohibited by law, and should have been banished long ago by our architects, our contracting builders, and our owners of property, all acting together in harmony.

It is but fair to the building products which this journal peculiarly represents, to acknowledge that the majority of the changes which Mr. Sturgis suggests in his article are such as are based upon the employment of burnt-clay products, and have been accepted by many of our leading architects as the best methods for constructing a fire-proof building. But, as he very truly says, the trouble in introducing any improvement in building in this direction is the queer superstitions about dignity and stateliness which possess the popular mind. And it must be observed that the popular mind is that of the millionaire property owner, or millionaire donor of buildings to public institutions, fully as much as it is the mind of the man who rents a small dwelling house. To an architect of rationalistic tendencies there is nothing more comical than to reflect upon the sayings of his clients with respect to the superior dignity of stone as a facing

of their walls, and the profound contempt of those same clients for brick. If, under the stress of the architect's personality and knowledge, the owner gives a half smiling assent to pleas for the value of brickwork, the contempt underlies this assent, and is in full force again in another instant. As a matter of fact, however, the stern practical necessity that has presided at the inception and development of the modern commercial building has forced both architect and client into the acceptance of brick and terra-cotta for the outside of every building which is intended to be absolutely fire-proof, though the extension of the same ideas to other buildings equally important progresses but slowly. We are not sure that we should care to see the whole of New York reconstructed of brick. We sometimes appreciate a brick front all the more by seeing how a neighbor misapplies granite or marble, and as for the old-fashioned iron fronts, which, to judge from Mr. Sturgis's eulogies thereon, deserve at least a measure of grateful remembrance, they are quite beyond the pale of artistic admissibility. Still, there are locations and conditions under which the advisability of extreme precaution may have to be considered, and in such instances we would not question the choice of material other than brick and marble, though we limit the choice of absolutely fire-proof structures to one single material, namely, burnt clay in its various modifications, and surely for the class of buildings such as the Windsor Hotel.

LAST month we had to report the burning of the Théâtre Français, in which at least one person suffered loss of life. We have just received the reports of a fire in Philadelphia in which a hotel burned while the guests slept. The Lorraine Hotel and apartment house on Broad Street, at Fairmount and Ridge Avenues, caught fire in the kitchen, apparently through neglect of the employees, and what promised to be a serious conflagration was held within very slight bounds because of the excellence of the fire-proof construction. Though the fire had quite a start before it was discovered, and was then first seen by a passer-by, the total damage was only in the vicinity of \$500. The building was fire-proofed by the Fawcett Ventilated Fire-proof Building Company, and is the third fire that has occurred in hotels where their system has been used and where there has been little or no expense for repairing floors after the fire.

Similar conditions accompanied a fire in the thirteen-story Condict Building on Bleecker Street, New York, which stands on the site of the old Bleecker Street Bank and the De Soto House, which were ruined by the conflagration on election night five years ago. The construction of this building was very carefully thought out by the architect, Mr. Lyndon P. Smith, and was especially planned to prevent the spread of fire, including the very desirable provision of iron enclosures for windows and freight elevator openings, and a separate hall for passenger elevator and stairs. The fire demonstrated the possibilities of fire-proof construction, as it was confined entirely to the section of the building in which it started, and the firemen had to break open the fire-proof doors of three floors before they could discover where it was.

Selected Miscellany.

NOTES FROM NEW YORK.

We are glad to be able to report that the general condition of business is very good, and the outlook for the summer promising. There are a number of unusually large and important building operations either under way or being seriously talked of. The latest one is the building for the Chamber of Commerce, and this being one of the city's best established and wealthiest organizations it is sure to be carried out. The members have generously contributed towards the building fund, and \$1,000,000 has already been raised. The president,

about \$50,000. Clinton & Russell have planned a brick and stone dispensary building for St. Bartholomew's P. E. Church on 42d Street, cost about \$75,000. Charles A. Rich has planned a nine-story hotel and studio building to be built at Sixth Avenue and 40th Street. The same architect has planned a brick parsonage for All Angels P. E. Church, cost \$30,000. Cady, Berg & See will build a brick and stone addition to the Munn Avenue Presbyterian Church, East Orange, N. J., cost \$40,000. McKim, Mead & White have prepared plans for the Hall of Fame for the University of New York at Morris Heights. This structure will be 500 ft. long and will connect the Hall of Languages with the Hall of Philosophy. The same architects are preparing plans for a fine brick and stone residence for Mr. P. A. Rollins, to be built at Madi-



HOUSE AT BROOKLINE, MASS.

Mr. Morris K. Jesup, has appointed a committee of three to report upon a suitable site and to procure plans.

The very interesting tenement house competition, recently held under the auspices of the Charity Organization Society, resulted as follows: First prize, R. Thomas Short; second prize, Israels & Harder; third prizes, Joseph Wolf, Covell & Smith, and Israels & Harder. It is understood that the winners of both first and second prizes have been commissioned to build.

It is gratifying to note that there is some easing off of the prices of building materials. During the past week there has been a drop of fifty cents in bricks, fifteen to twenty cents in cements, and fifteen cents in lime, also some reduction in the price of lumber. These are due to natural causes, but materials will have to come down still more to make a boom.

Here are a few items of new work in brick and terracotta, etc. C. P. H. Gilbert has planned a four-story residence for Mr. S. Rossin, to be built on 62d Street, cost

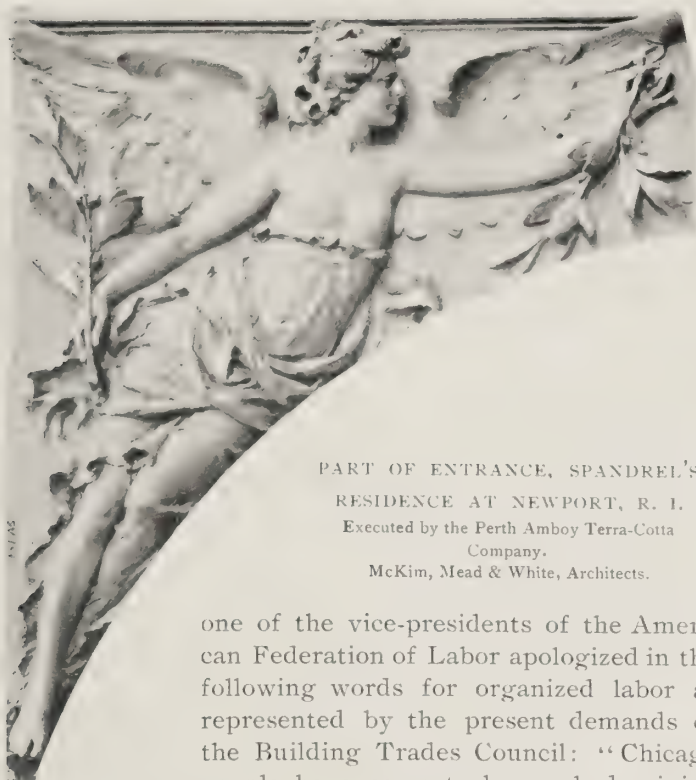
son Avenue and 78th Street. Percy Griffin is the successful competitor in the competition for the Charlotte Williams Memorial Hospital, to be erected at Richmond, Va.

NOTES FROM CHICAGO.

Mr. F. J. Fitzwilliam, a former pupil of D'Espouy & De Monclos in Paris, and of Masqueray in New York, has opened in the Auditorium Building a school for instruction in architectural composition and presentation to be known as the Atelier Fitzwilliam.

The sub-committee of the industrial commission, which has been investigating labor troubles and labor conditions in Chicago, has concluded its hearings, in the course of which much evidence has been given on both sides of the controversy, all tending to show the existence of a very grave state of affairs in Chicago, particularly as regards the building industries.

At a dinner given at the Marquette Club on March 31,



PART OF ENTRANCE, SPANDREL'S
RESIDENCE AT NEWPORT, R. I.
Executed by the Perth Amboy Terra-Cotta
Company.
McKim, Mead & White, Architects.

one of the vice-presidents of the American Federation of Labor apologized in the following words for organized labor as represented by the present demands of the Building Trades Council: "Chicago people have come to have a bad opinion of the labor unions of this country. The Chicago Building Trades Council and a few labor leaders have been responsible for this opinion. I, as an officer of the national labor body, ask you not to judge the labor unions by the Chicago Building Trades Council. We are as much opposed to some of their rules and to the action of certain of their members as are many of the citizens of Chicago."

In a recent lecture on "The Renaissance of Civic Beauty," given by Professor Zueblin of the University of Chicago, the great necessity for a municipal plan was pointed out. Foreign cities, notably Paris, Edinburgh, and Carlsruhe, were cited as examples of cities built upon a broad, comprehensive plan. In these and some other foreign cities, as well as in our own national capital, the advantages of a grand plan are manifest. Never was the need more pressing for a united effort on the part of the city officials and the organizations interested in municipal improvements to get together and arrange for such action as will lead to the solution of the difficult problem in planning the newer and better Chicago, which, it is to be hoped, will replace our vast mushroom growth, which has inadequately provided for the business to be done by land and water, and which has proceeded from the beginning with no large thought of system or civic beauty.

The interests of thirty-six of the leading manufacturers of common brick in Chicago and Cook County have been consolidated through the organization of the Illinois Brick Company, capitalized at \$9,000,000, \$4,000,000 of which is 6 per cent. preferred stock. The officers of the new company are: President, Leonard H. Harland; vice-president, D. V. Purington; secretary, W. E. Schlake; treasurer, C. D. B. Howell; auditor, Charles B. VerNooy. Mr. D. V. Purington, vice-president of the new company, is quoted as saying that they will try to fix the price of common brick at \$6.50 per thousand. The total output

of common brick last year in Cook County was estimated at 3,000,000, with a total capacity for the sixty common brickyards in the country when all are in full operation of 1,000,000,000 bricks per annum.

As the National Convention of the Architectural League of America is to be held in Chicago in June and the Chicago Architectural Club is to be host of many visitors, the executive committee of the club has decided upon the immediate improvement of its club rooms in the most artistic manner possible. To this end a competition for this improvement, open to all members, is being held.

NOTES FROM ST. LOUIS.

Work opens up very slowly, and anticipated labor troubles become another factor in the delay of a long-hoped-for revival of business.

Weber & Groves are the architects for Charles G. Stifel's five-story office building on 4th and Locust Streets, which will cost \$90,000, and for the Benoist Building on 7th Street and Clark Avenue, a warehouse that will cost \$40,000.

Barnett, Haynes & Barnett are building a hospital and asylum for St. Ann's Society, which will cost \$200,000. It is to be in English Gothic, and is located on Union and Page Avenues. The same architects are also putting up a fire-proof office building on Grand Avenue and



RESIDENCE FOR MRS. SHEPARD, EAST 67TH STREET, NEW
YORK CITY.

Fire-proofed by the National Fire-Proofing Company.
Haydel & Shepard, Architects.

Olive Street for the Olivia Building Company. Cost \$60,000.

Cope & Stewardson have been selected as the architects for the new buildings of The Mary Institute on Lake Avenue, near Delmar Avenue, and Louis Mullgardt as architect of the Field Club Building.

The new Centenary Hospital, on Chestnut Street, near 30th Street, will cost \$250,000. J. B. Legg is the architect.

At the annual meeting of the St. Louis Architectural Club, held April 4, the following officers were elected for one year:

President, Edward G. Garden; first vice-president, William B. Ittner; second vice-president, Ernest Helfenstallar, Jr.; secretary, Frank A. P. Burford; treasurer, Ernest J. Russell.

NOTES FROM PITTSBURGH.

The Park Building, one of our largest office buildings, has lately been treated in a manner which can hardly be described as anything else but disgraceful. One of the first-story stores was rented to a concern which has started a Moorish Café. Not content with decorating the interior and filling one of the large front windows with a sort of Moorish fretwork, they have painted the exterior granite work of their portion of the building in alternating bands of the most vivid red and yellow. Imagine a fourteen-story office building with one corner done in red and yellow bands. It is hard to understand how an owner would allow such a thing even to obtain a long lease tenant.

This year we are fortunate in not being troubled by strikes in the building trades. The contractors and unions have come to an agreement on wages and have decided on an eight-hour day.

The competition for the Allegheny High School has been decided in favor of F. J. Osterling.

A competition is being held for a library building given by Mr. Carnegie to the city of McKeesport, Pa.

Alden & Harlow are preparing plans for a twelve-story office building to be built on the corner of Fourth Avenue and Smithfield Street. They are also at work on

a library building to be built at Duquesne, Pa., to cost \$300,000; and one to be built at Steubenville, Ohio, to cost \$75,000.

It is reported that the prices of steel and iron have started downward, and that the steel companies are already making large cuts in private contracts.

In a large office building now going up, we have an instance of how some contractors do work. It is of brick, and the walls were commenced at several different stories; but instead of so laying out the work that the brick would come together perfectly at these different levels, or making the joint at a belt course, no attention seems to have been given to this point, and when the walls, started at the ground, reached the fifth floor there was about an inch to spare. Now we have a course of chips of brick laid in "any old way" around the two street fronts of this building.

The director of public works is buying up odd pieces of land here and there in the city with the intention of making them into small parks. Now let us have a few park shelters such as they have been building in New York.

NOTES FROM SAN FRANCISCO.

The Extension of Golden Gate Park "Panhandle" is already an assured fact; while architect Cahill's scheme for the rearrangement and embellishment of Market Street in the neighborhood of the City Hall is finding much favor with architects and those having the artistic welfare of the city at heart.

The original designs of M. Benard, which won first prize in University of California Competition, cannot be carried out for less than \$80,000,000, an amount entirely out of all proportion to the need or financial ability of the State. It is now decided to have the buildings cost in all about \$15,000,000, an average of about \$400,000 for each. The sketches for this simplified scheme are promised early in April and final drawings by October. M. Benard is not expected to take charge of the work, but will probably turn over his designs to the University Regents, who will doubtless employ local talent to carry them out, as is being done in the case of the Stanford University.

Messrs. Albert Pissis and George W. Percy, two prominent architects, together with Mr. Joseph Rowell, librarian of the State University, have been appointed



SEAL OF THE CITY OF NEW YORK. PORTION OF PANEL USED ON SCHOOL BUILDINGS.

Executed by the New York Architectural Terra-Cotta Company.
C. B. J. Snyder, Architect.



CARVATID, WARNER BUILDING, PHILADELPHIA.

Executed by the Conkling-Armstrong Terra-Cotta Company
C. W. Bolton, Architect.



PANEL, ENTRANCE, WHITE STATE HOTEL, NEW YORK CITY.

Executed by the Atlantic Terra-Cotta Company.
Barney & Chapman, Architects.



LIVING ROOM, HOUSE AT TENAFLY, N. J.
Kenwick, Aspinwall & Owen, Architects.

judges of the Oakland Free Library Competition, made possible by the \$50,000 gift of Andrew Carnegie.

Mr. Carl Werner, a San Franciscan, is to have the honor of having his drawing of a project for a Trophy Building exhibited at the Paris Exhibition, it having won first prize at the Institute of Technology, Boston.

A new Custom House, costing \$3,000,000, is one of the possibilities, the present one being a disgrace and an eyesore to the city.

There is a happy tendency in the better residence districts to build in brick and terra-cotta, and several substantial dwellings are being erected in these materials. For moderate size residences "clinker" brick is much in vogue. Up to four years ago a brick residence was an exception here, but owners are slowly awakening to the beauty of this building material. This with a disposition to leave off the hideous bay windows that so mar the architecture of San Francisco will tend to raise the standard to where it ought to be. Reid Brothers have two quarter million dollar residences nearing completion, one is wholly of cream colored terra-cotta above the basement, the plain surfaces being faced with slabs 12 by 16 ins. This is the first building erected here entirely of this material.

Architect A. C. Schweinfurt, late of San Francisco, is at present studying the ruins of the "Parthenon."

G. W. Percy, associated with Willis

Polk, is architect for the Alvinza Hayward office building. It is to be eleven stories high and completely fire-proof, marble and metal taking the place of wood throughout. It will contain 250 offices with stores underneath. Brick and terra-cotta will be used for the exterior.



CITY HALL, EAST ST. LOUIS, ILL.
Veneered with impervious white-coated brick, manufactured by the Hydraulic-Press Brick Company.
E. C. Janssen, Architect.

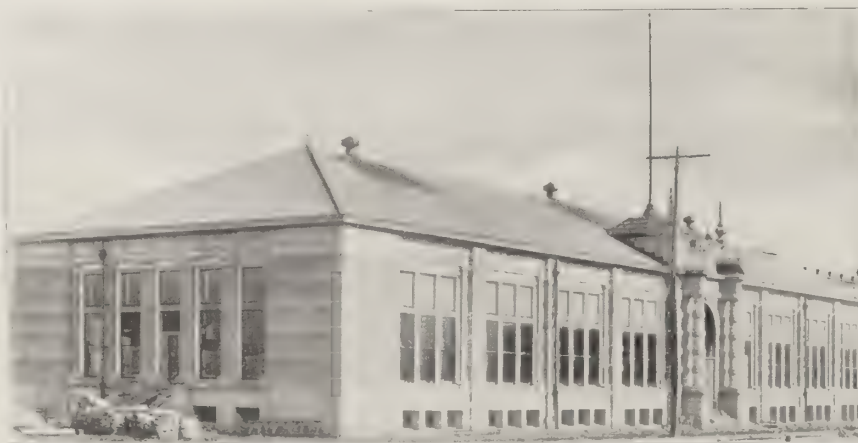


ARCHITRAVE CROWN.
Executed by the New Jersey Terra-Cotta Company.
John Hauser, Architect.

The Tiffany Enameled Brick Company have been awarded the contract to furnish their enameled bricks for the State Capitol at St. Paul, Cass Gilbert, architect. They

will furnish also the brown pressed brick to be used in the new depot at Des Moines, Iowa, Frost & Granger, architects; also their enamel brick for the new depot at Rock Island, Ill., Walter T. Krausch, architect.

Fiske & Co., Boston, representing the Ludowici Roofing Tile Company, have closed contracts for roofing the summer



LIGGETT & MYERS OFFICE BUILDING, ST. LOUIS, MO.
Roofed with Ludowici Roofing Tile.
Isaac Taylor, Architect.



CAPITAL FOR RESIDENCE AT CHICAGO.
Executed by the Northwestern Terra-Cotta Company.
Frank L. Wright, Architect.

residence of Herbert Dumerasq, Esq., near Weirs, N. H., Harry J. Carlson, Boston, architect; also roofing of the new library at Sunderland, Mass., W. Leslie Walker, New York, architect. In both these buildings their Spanish Roll pattern of double interlocking tiles is used. These tiles are laid without the use of elastic cement, and make a most perfect and lasting roof. Upon the Sunderland Library a dull green glazed tile is used, which presents a novel and artistic appearance. It is interesting to note the great increase in the use of tile for roofing purposes in this market. They are fast being recognized as the best of all roofing materials.

Henry Maurer & Son, 420 East 23d Street, New York City, manufacturers of the "Herculean" terra-cotta arch, which was described at some length in the March number of THE BRICKBUILDER, have issued a pamphlet which covers more thoroughly the details of construction of this arch. It will be sent to any one upon application to the company.

The Grueby Faience Company, Boston, announces the removal of its city office to 2 A Park Street, where samples of tiles and architectural enameled work, both plain and ornamental, may be seen, and estimates given. English ceramic mosaic for floors, walls, and ceilings have recently been added to the Grueby materials.

Facilities at the kilns have been greatly improved, which enables the company to execute special work with far greater accuracy and promptness than has been possible heretofore. A skilful mason is associated with them. Among the buildings in which enameled work made by the Grueby Faience Company has been used are the following:

The Tremont Temple Baptistery, Boston, Blackhall & Newton, architects; Adams House Annex, Boston, W. Whitney Lewis, architect;

new Reynolds House grill room, Boston, Arthur Vinal, architect; smoking room, Terminal Station, Boston, Shepley, Rutan & Coolidge, architects; Moorish smoking room, Colonel Winslow's house, Leicester, Mass., John Lavalley, architect; Church of the Sacred Heart, Newton Centre, W. H. McGinty, architect; stable for Mr. A. C. Burrage, Boston, Frederick W. Reed, architect; house of Mr. A. C. Burrage, Boston, Charles Brigham, architect; stable for Mr. Dumaresque, Boston, Winslow & Wetherell, architects; subway for Jordan, Marsh & Co., Boston, Winslow & Wetherell, architects; Boston Subway, Howard Carson, chief engineer; house for Mr. Howard, Montclair, N. J., John Galen Howard, architect; house in New York City, Philip Hiss, architect; Mr. Warren's house, Cambridge, H. Langford Warren, architect; interior May Memorial Chapel, Rose Hill, Chicago, J. L. Silsbee, architect; Scroll and Key House, New Haven, Ernest Flagg, architect; vestibule, Detroit Opera House, A. W. Chittenden, architect.

At the last meeting of the Architectural League, New York, the question of the licensing of architects was discussed and aroused considerable enthusiasm. The principal advantages to be derived, according to the speakers, are that such a recognition of the profession of archi-



BATTERY PARK BUILDING, PEARL AND STATE STREETS, NEW YORK CITY.
Built of cream white bricks, manufactured by the Powhatan Clay Manufacturing Company.
Clinton & Russell, Architects.



COLUMN AND CAPITAL.
Executed by the Indianapolis Terra-Cotta Company.

ecture by statute would undoubtedly raise the standard of the profession; that such a measure was not now an experiment, as it has been in satisfactory operation in Illinois for some time, and the question is now being agitated in New Jersey and Ohio. A committee was appointed to consider the matter and report.

A contemporary calls attention to a form of fire-proof construction which has somewhat alarming possibilities, the construction being made of a mixture of Portland cement, concrete, and coal ashes, or at least such was the claim, though investigations showed that a considerable proportion of coal screenings was mixed with the ashes, with a result that under some extreme conditions the fire-proofing could actually burn. On the face of it this seems like an absurd contradiction, but we have seen repeated cases of ashes taken from furnaces which would



HOUSE AT BALTIMORE, MD.
Brick used, manufactured by the Powhatan Clay Manufacturing Company,
Richmond, Va.
William M. Ellicott, Architect.

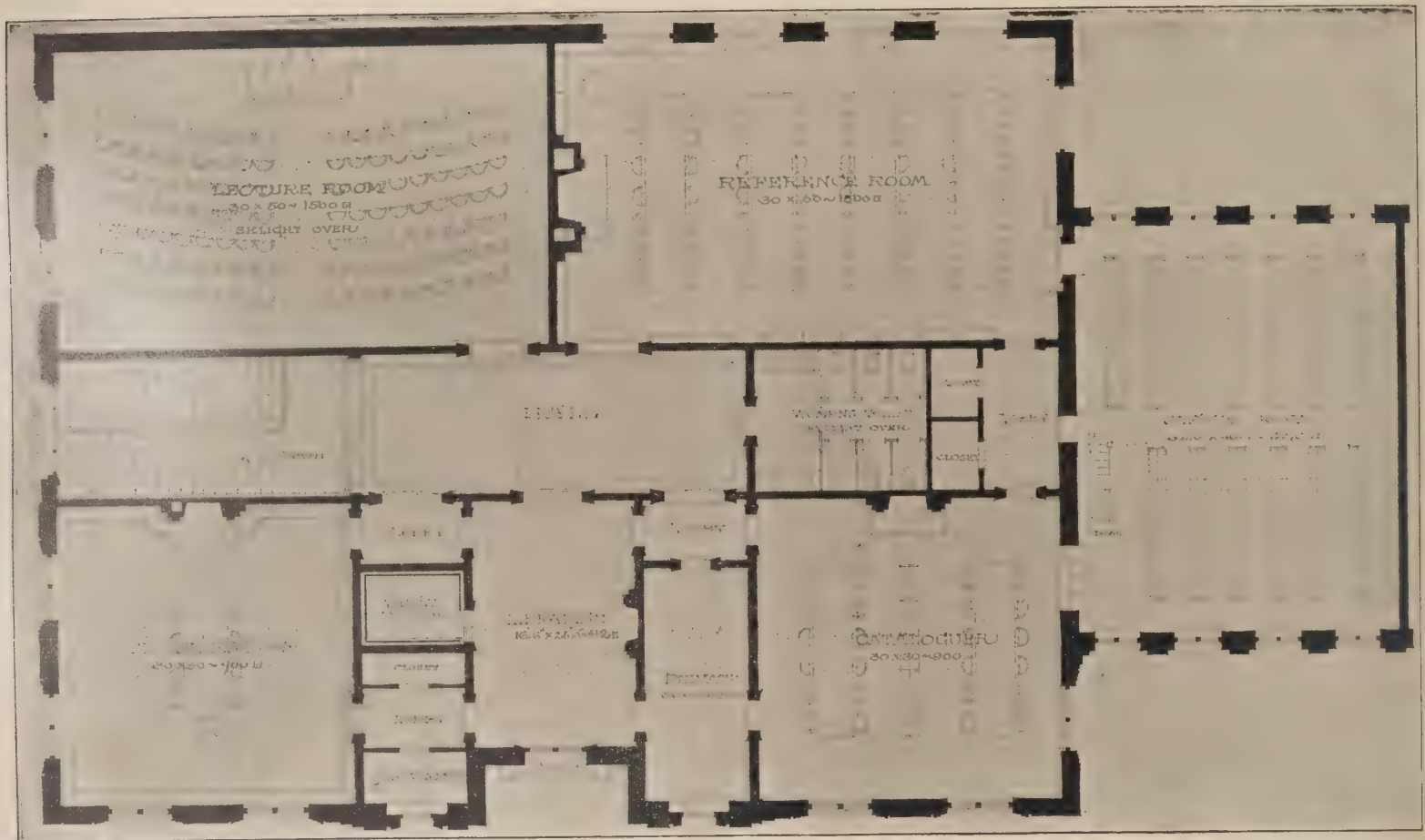
the selection might not be as rigid as would insure the rejection of any ash containing unburnt coal. Indeed, one complacent advance agent of a new construction smilingly claimed a great superiority for his construction because it was manufactured out of a combination of



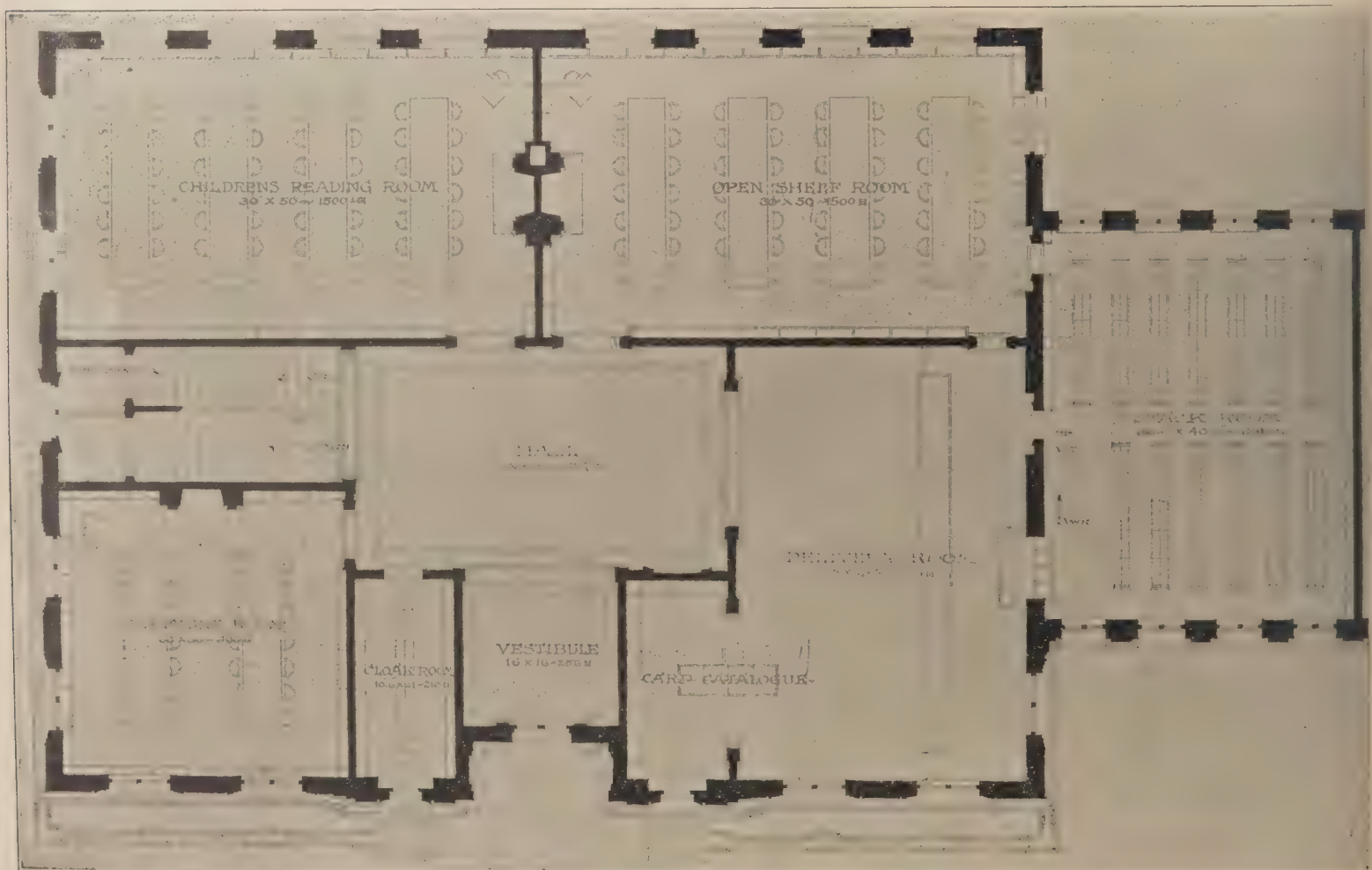
HOUSE AT BUFFALO, N. Y.
McKim, Mead & White, Architects.

support a very considerable degree of combustion, and with the demand for ashes as a factor in the fire-proof construction of large buildings it is quite possible that

coal screenings and concrete. Verily the difficulties which beset the harassed architect in the selection of the wherewithal with which to build are without end.



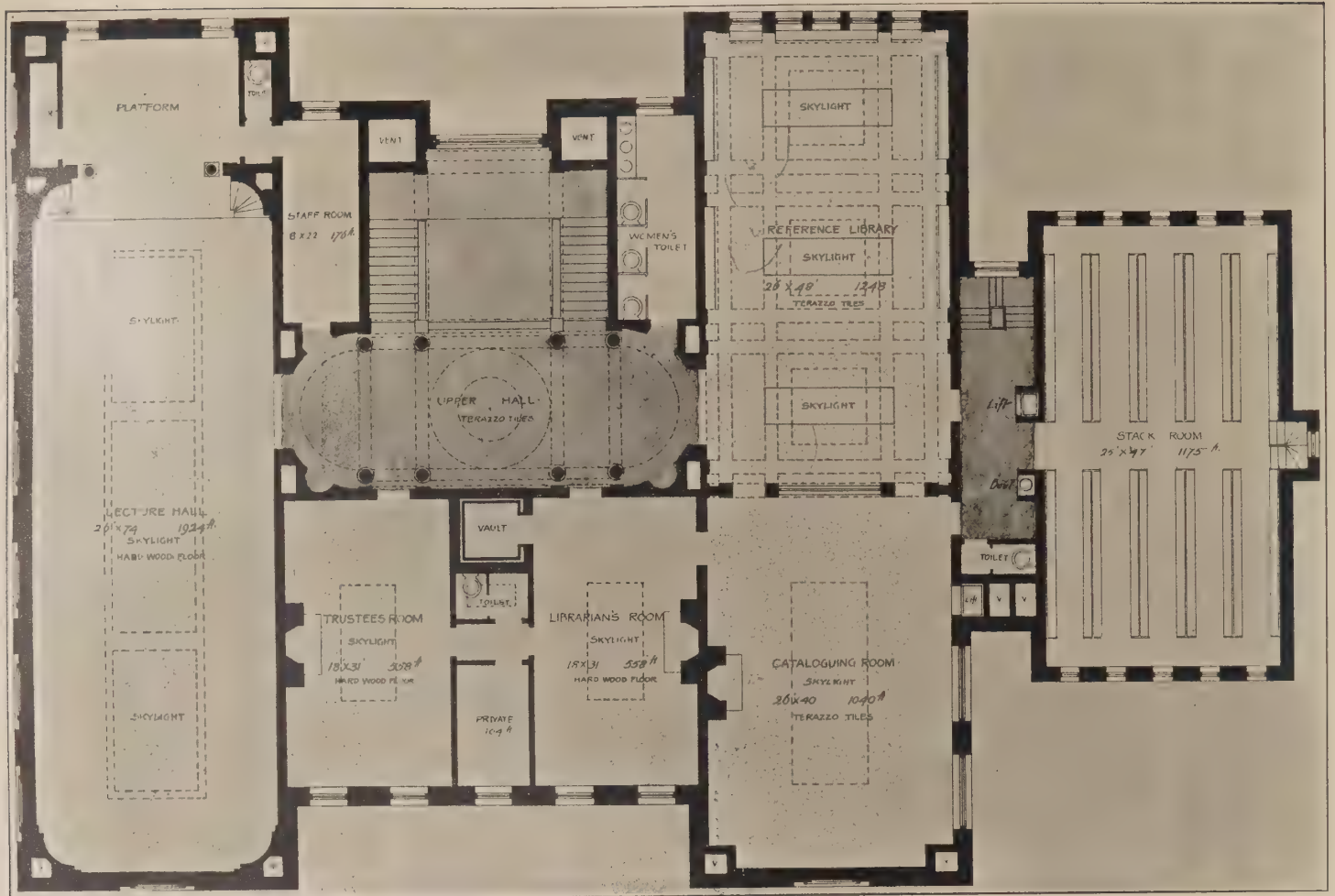
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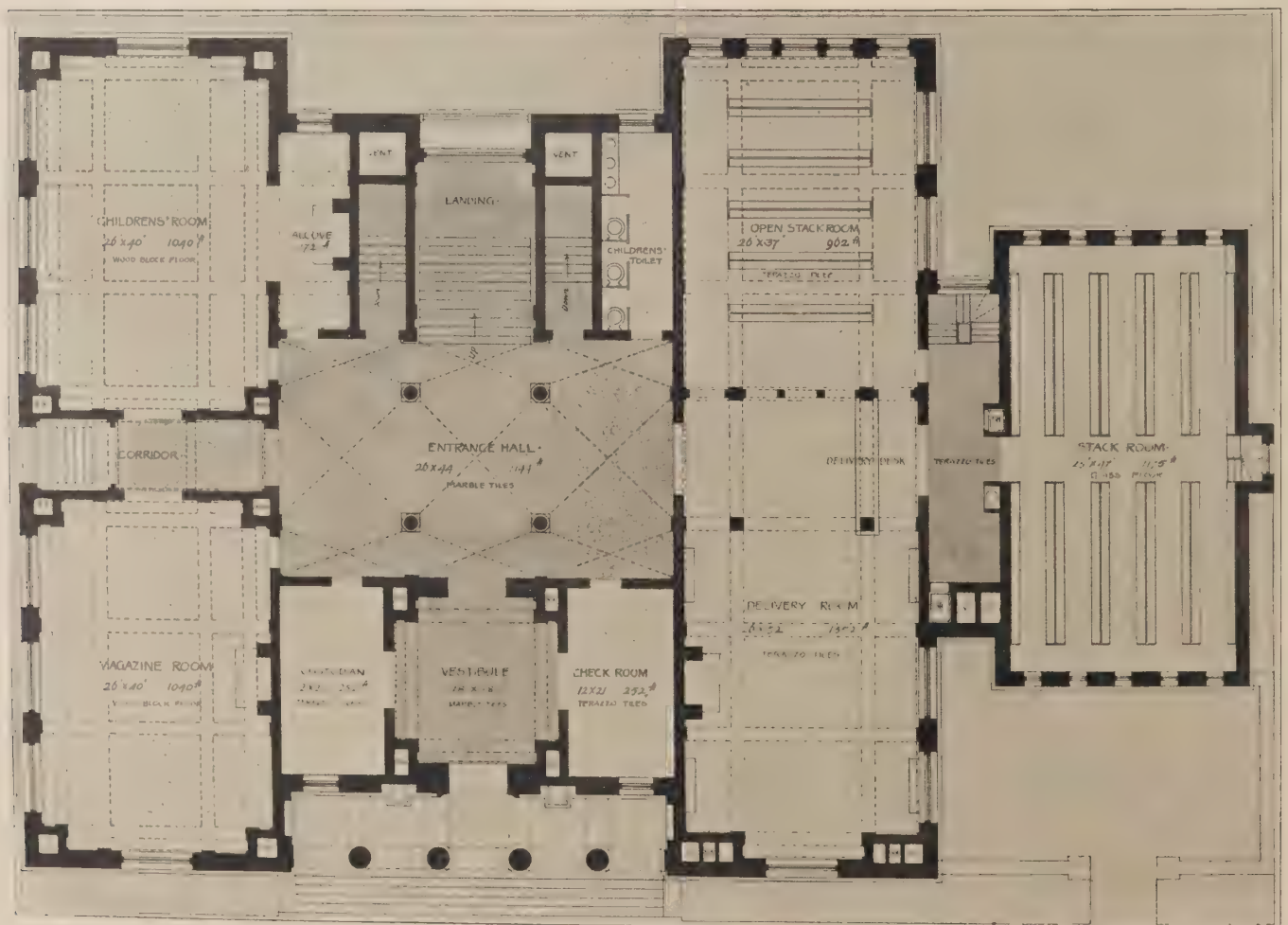
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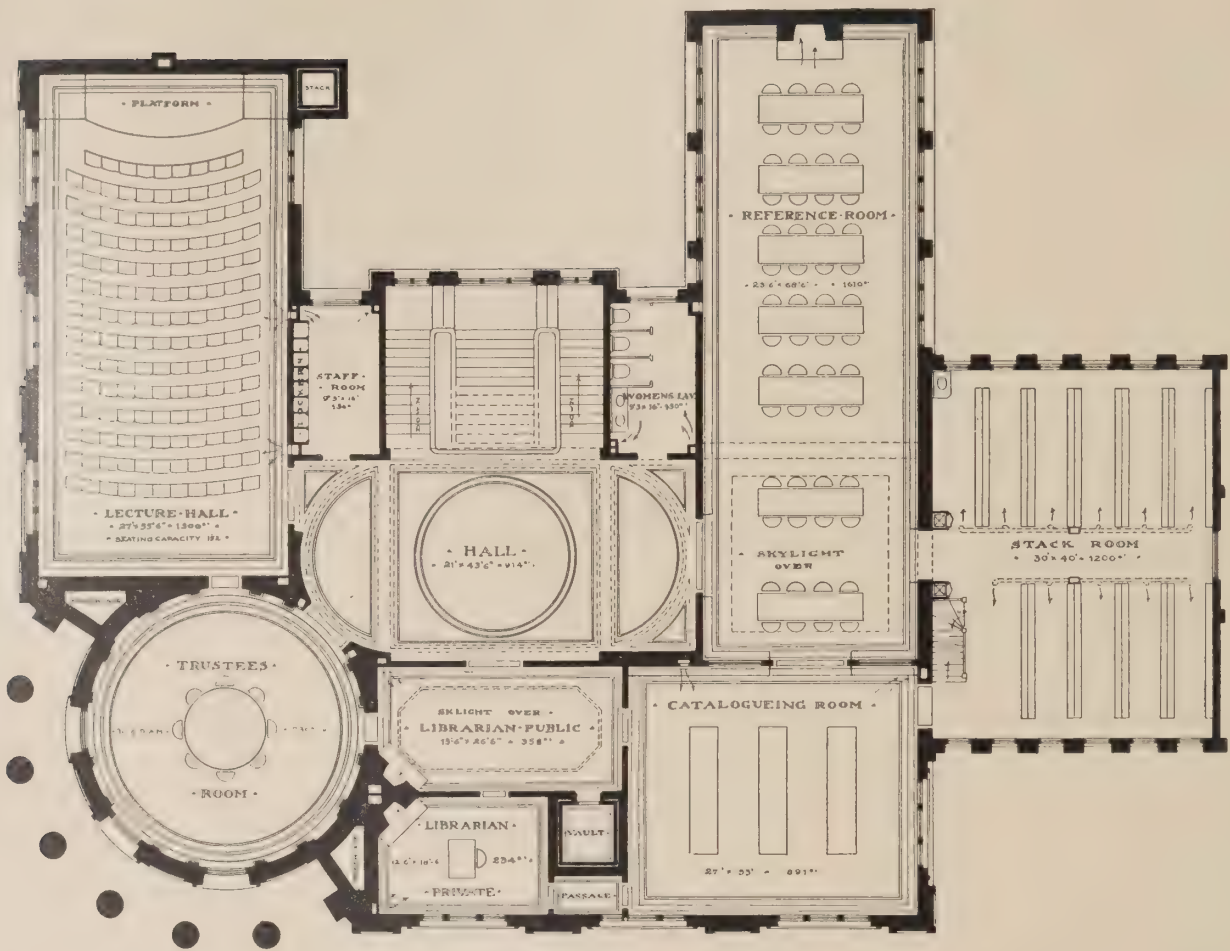
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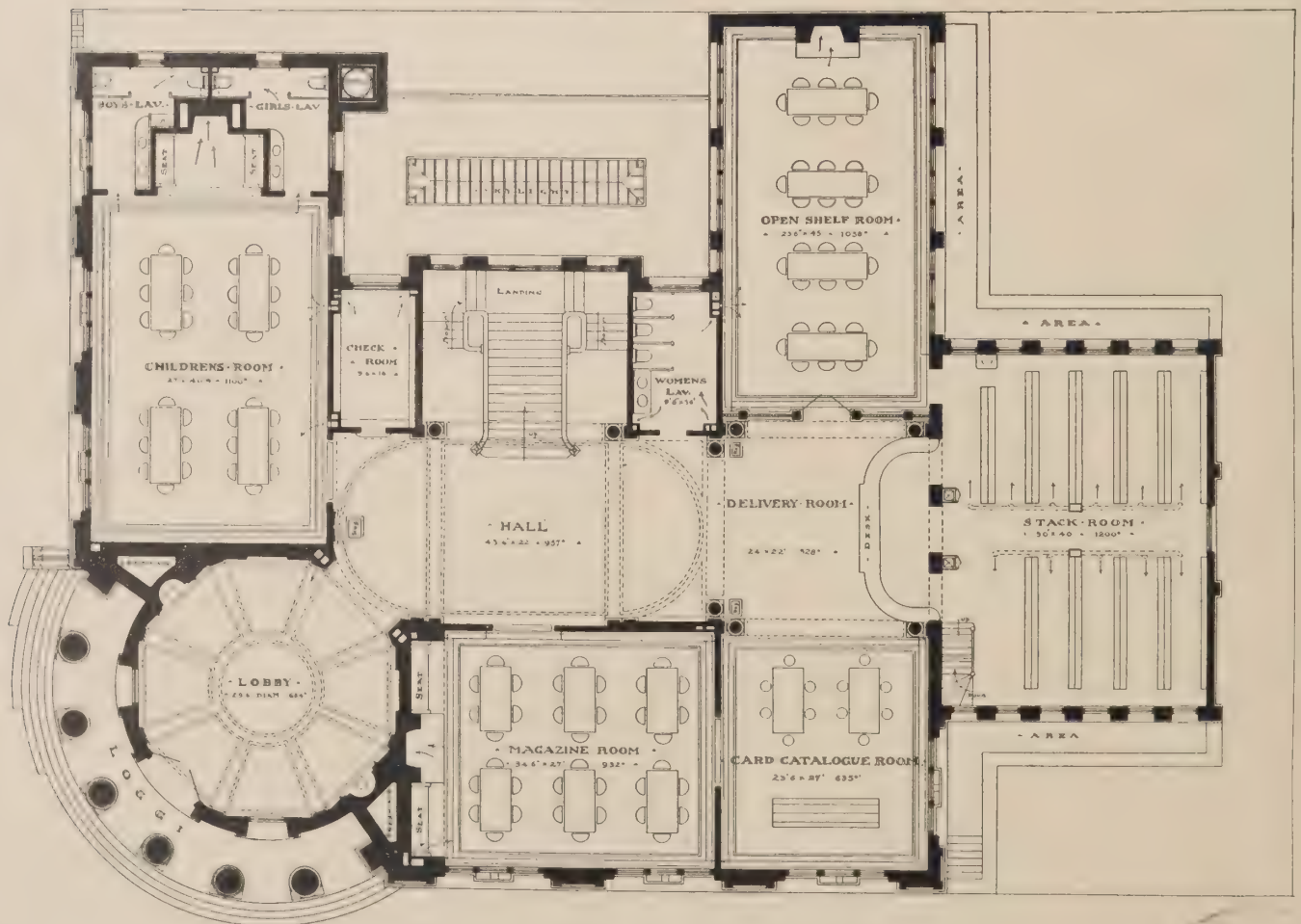
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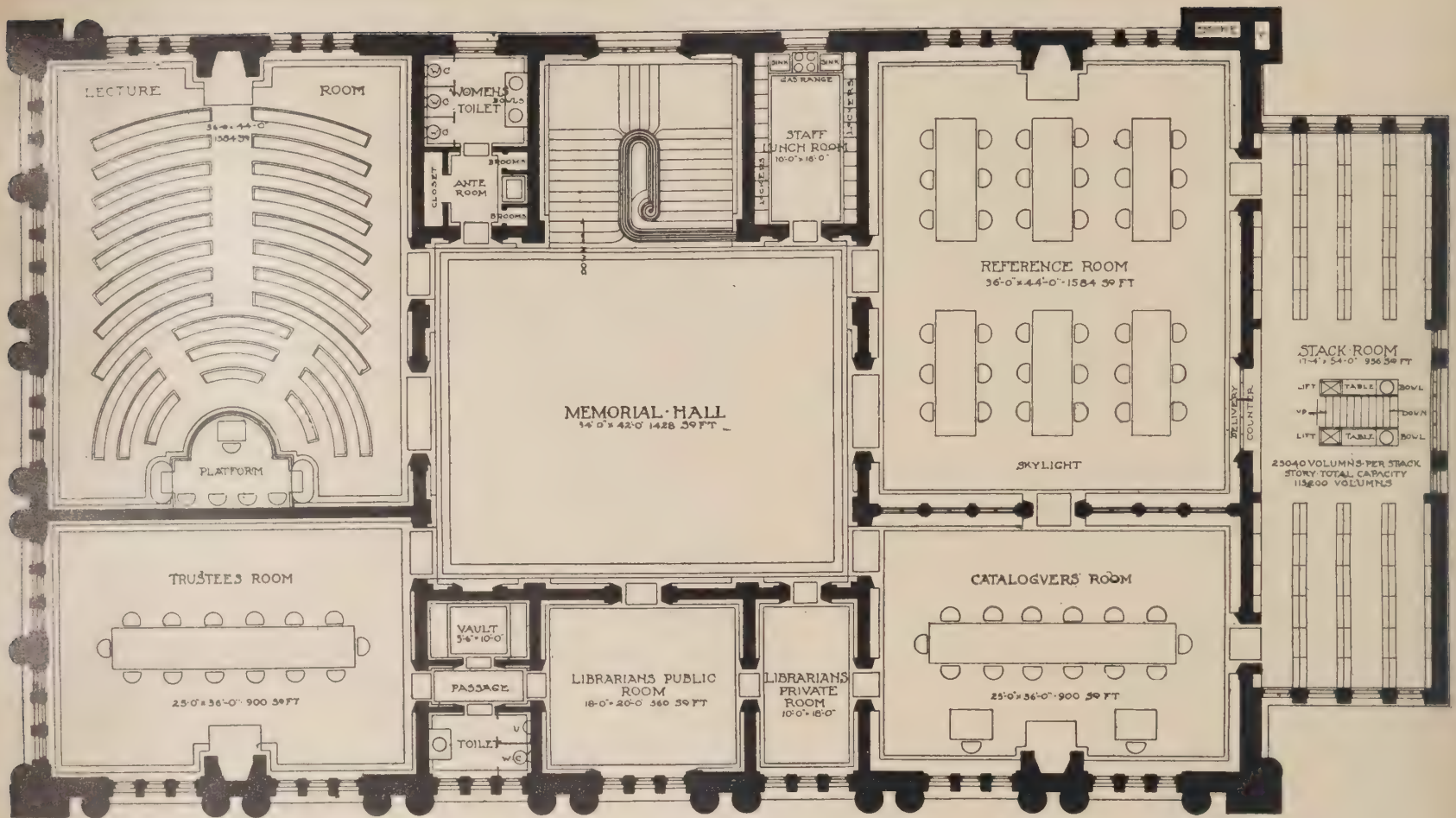


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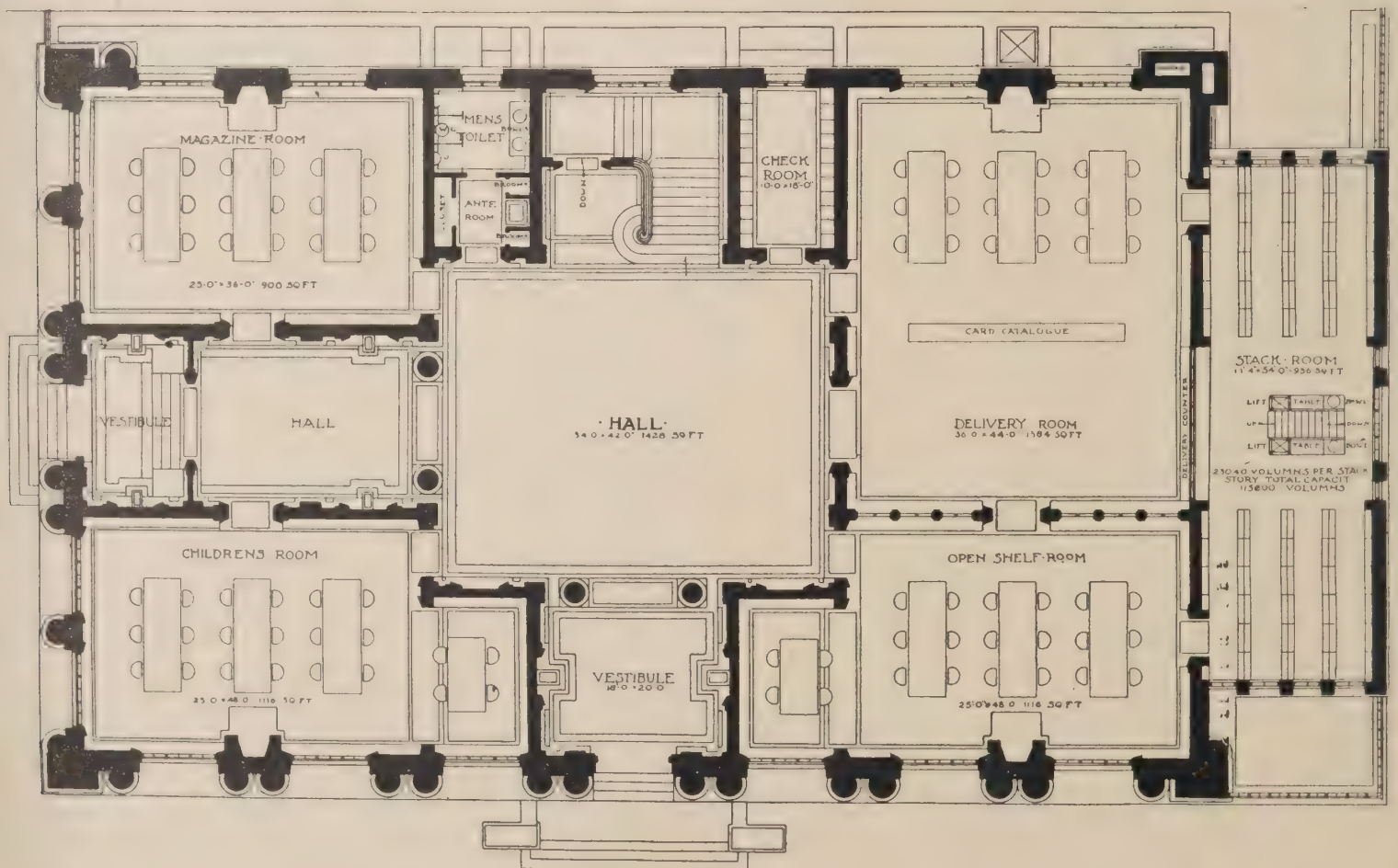


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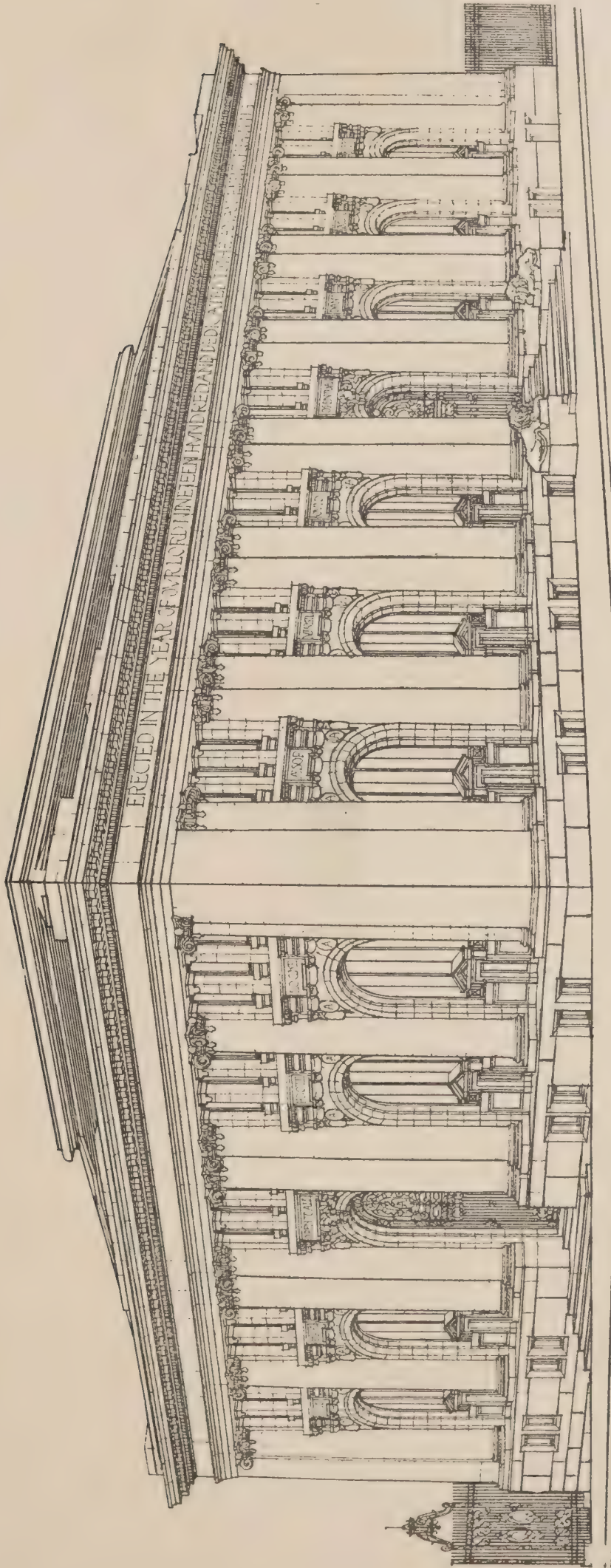
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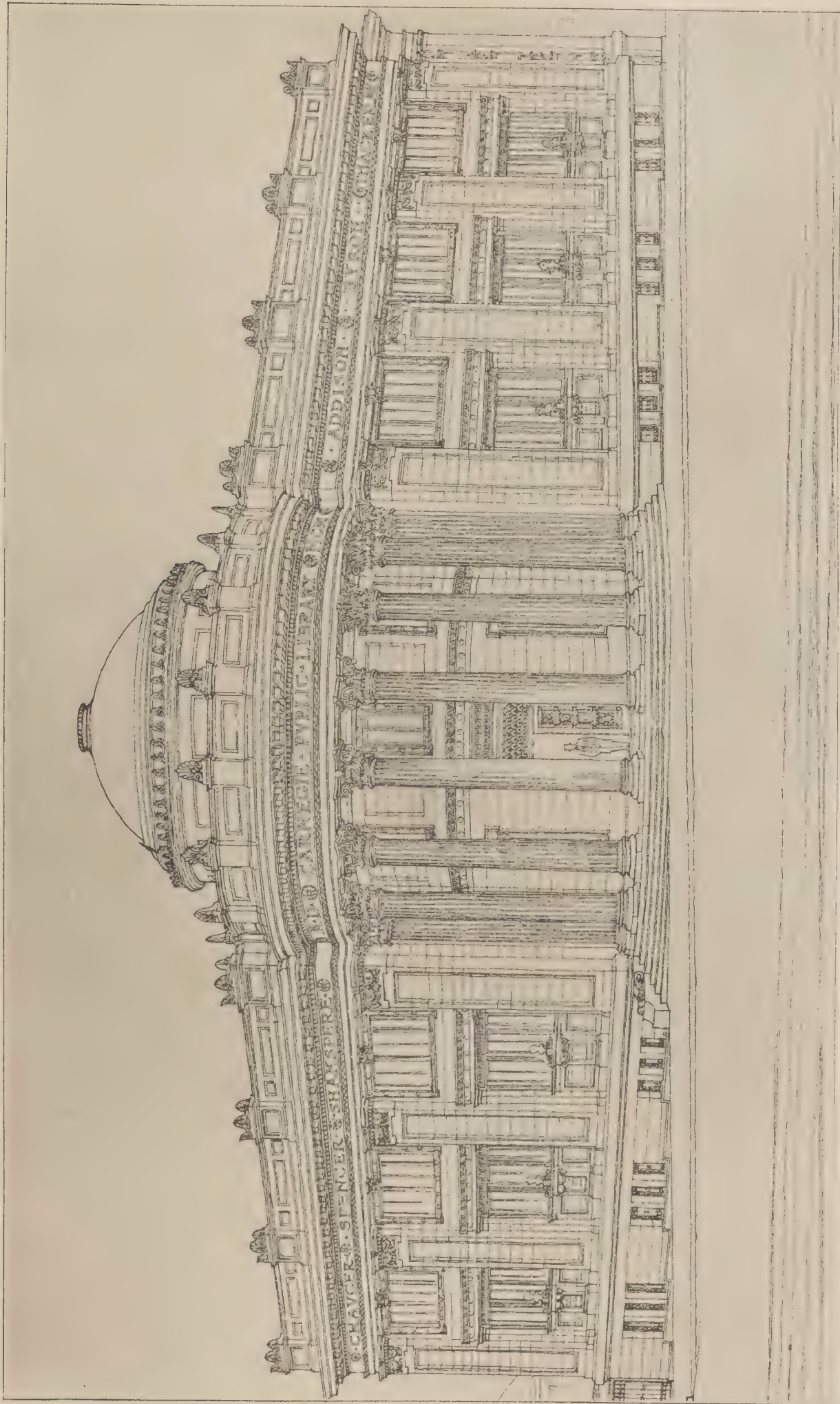
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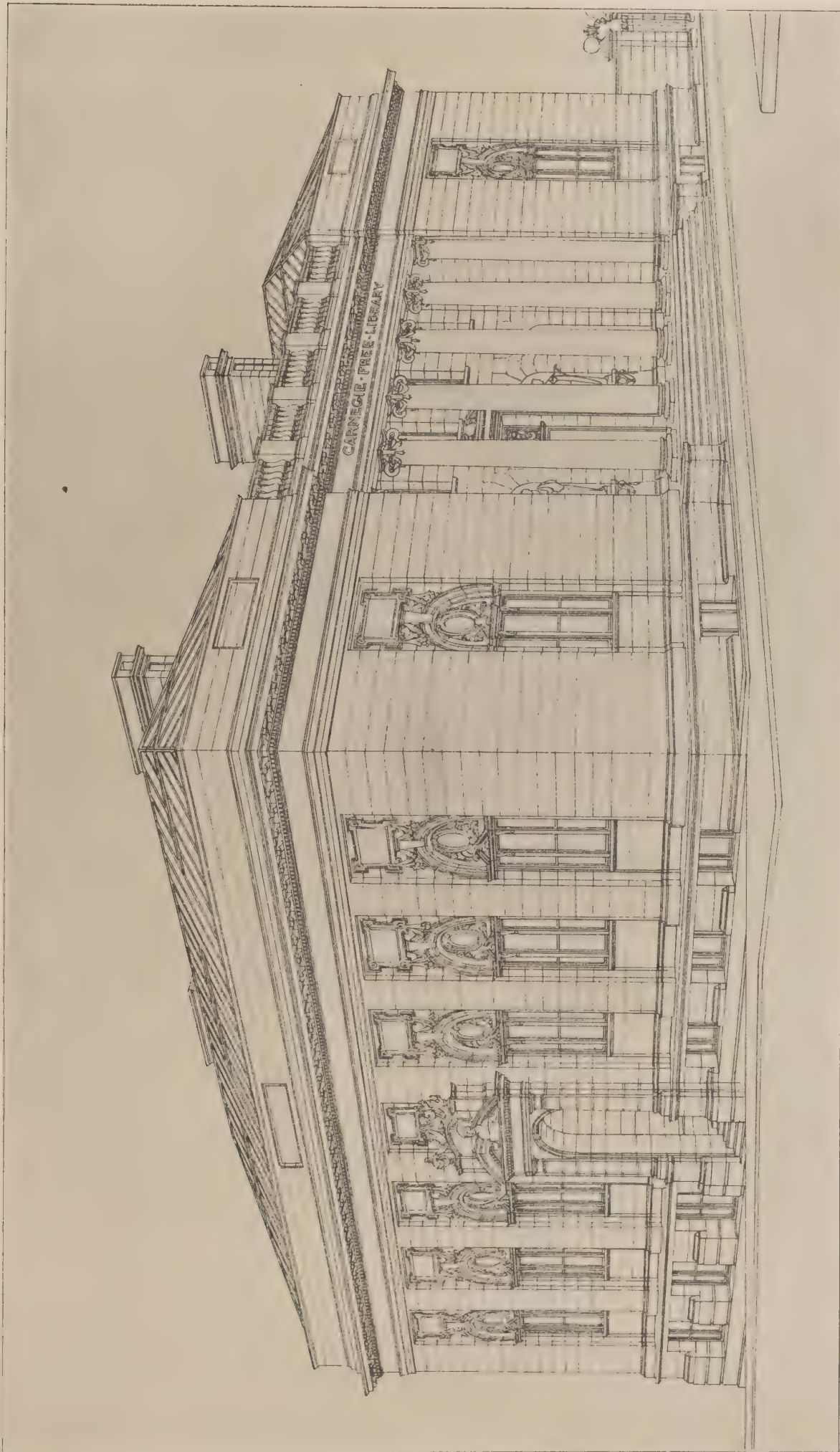
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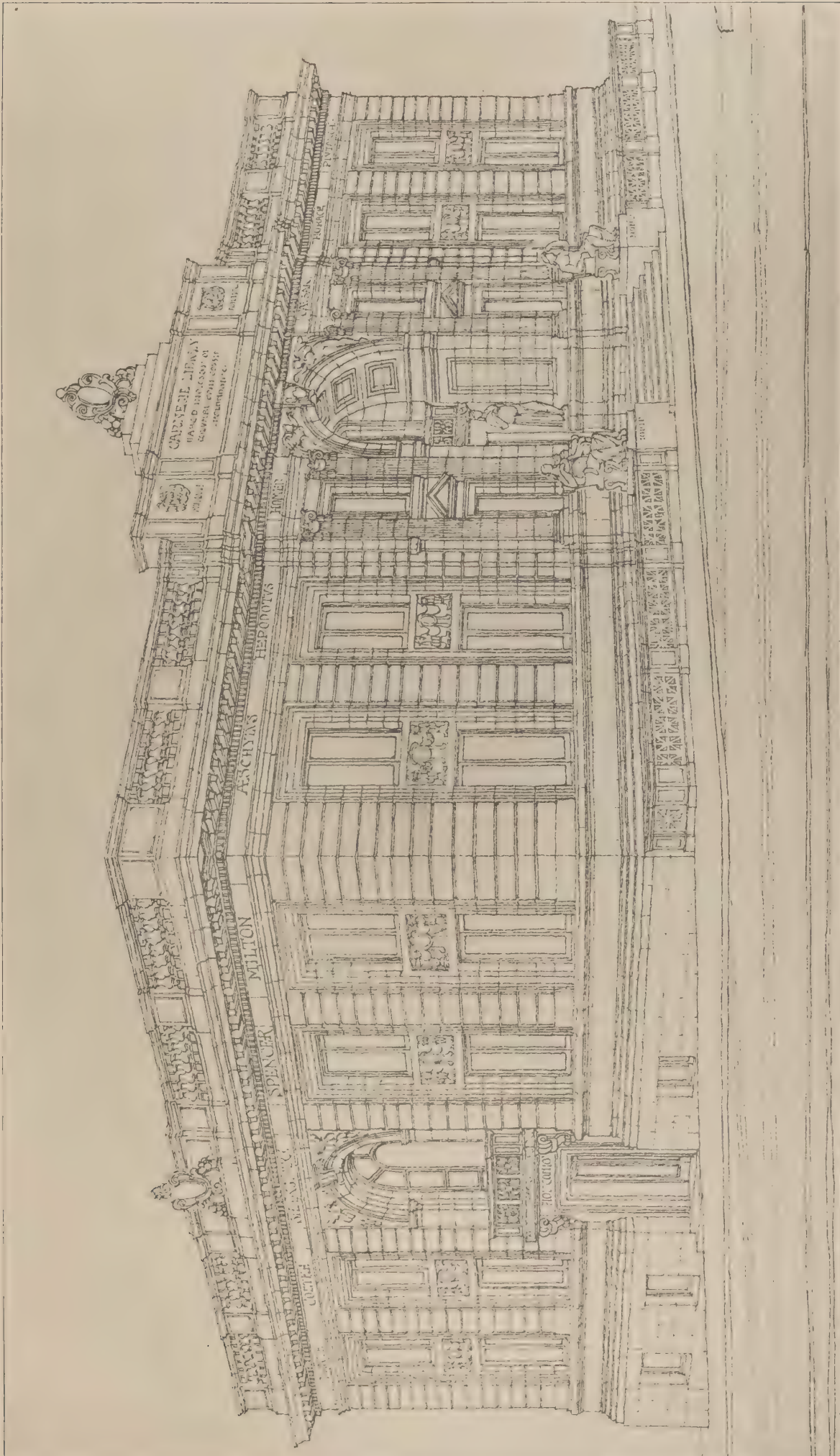
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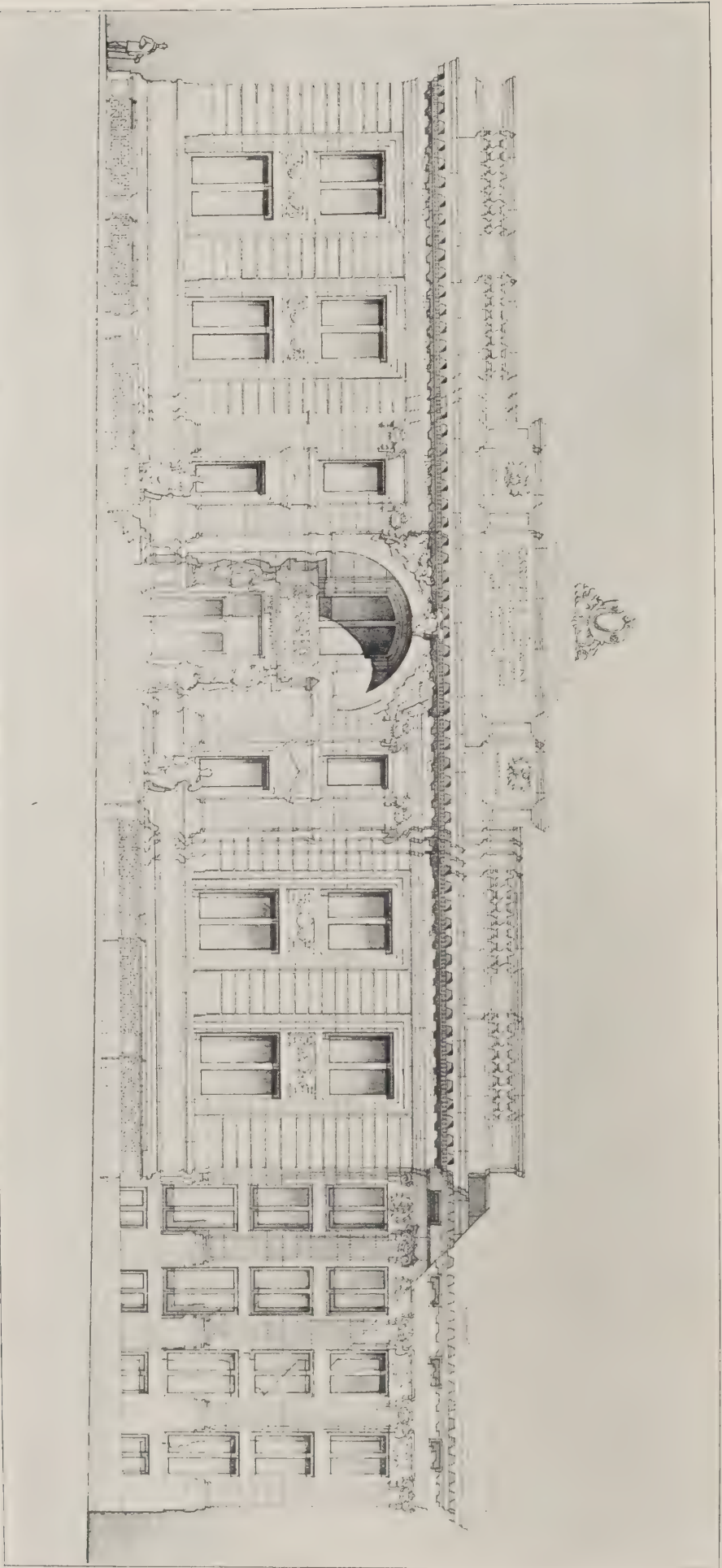


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DESIGNED BY J. M. COLEMAN, ARCHT.
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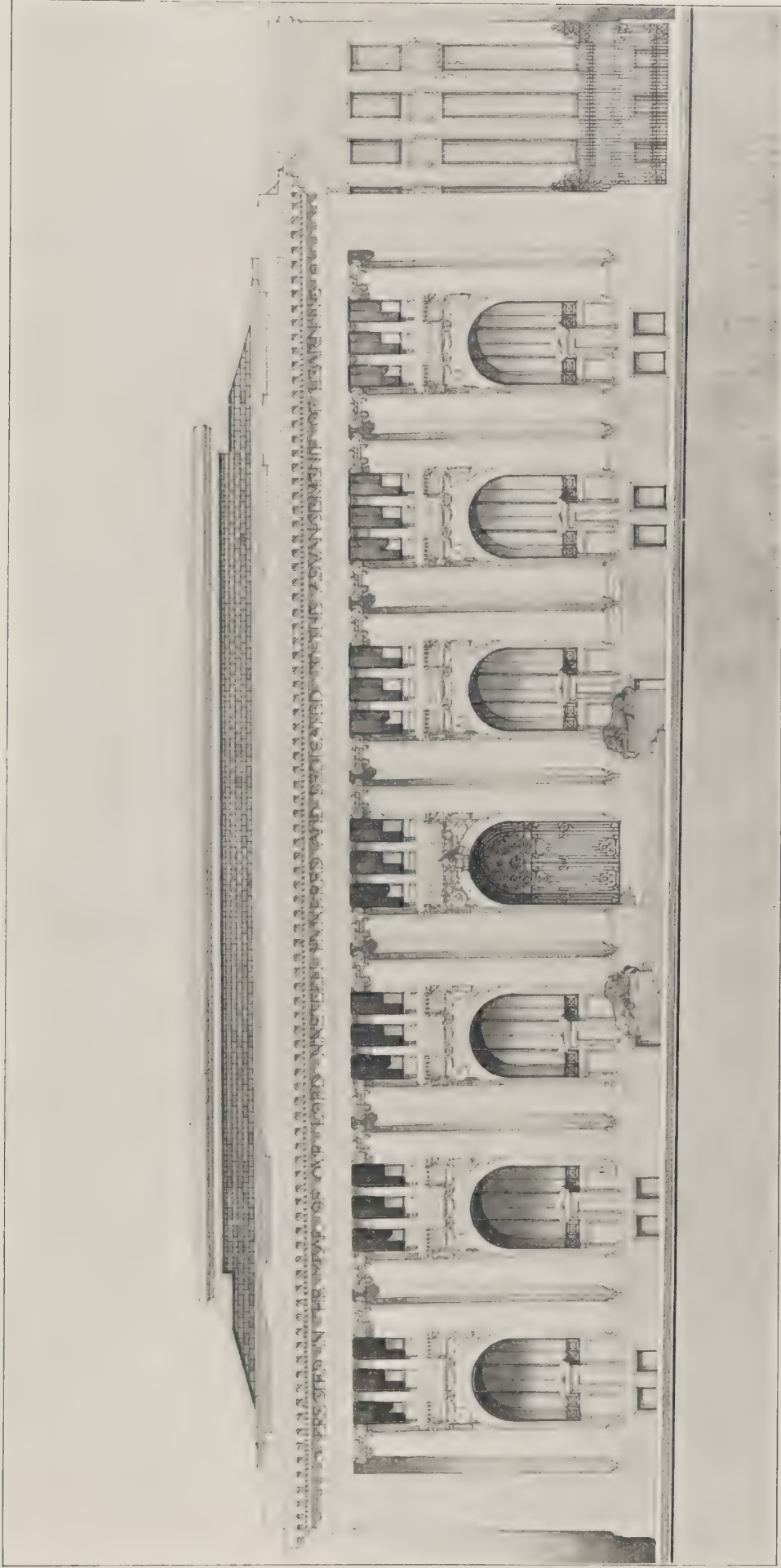


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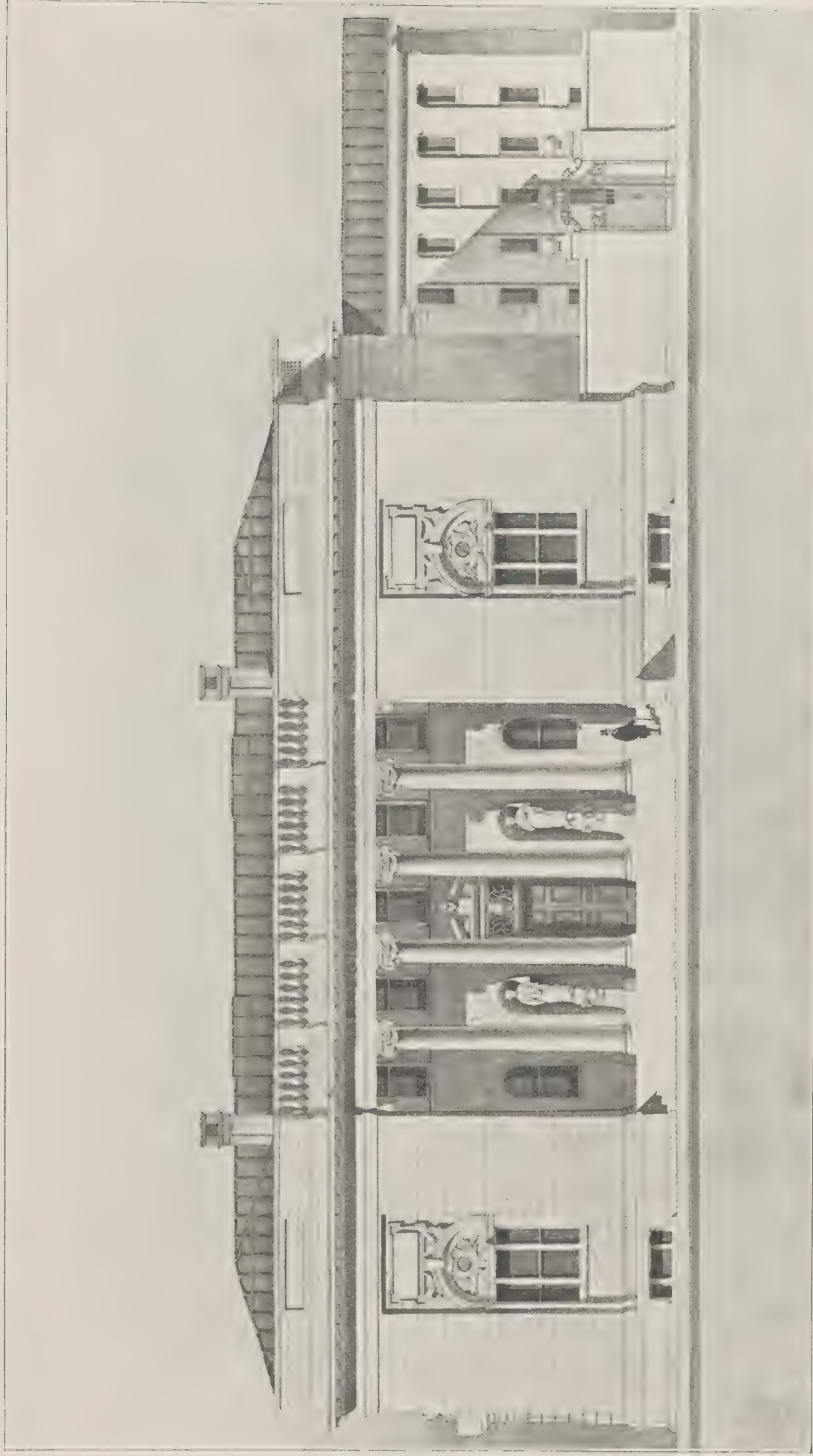


DOWN TOWN HEADQUARTERS, NEW YORK FIRE DEPARTMENT, GREAT JONES STREET,
NEW YORK.

ERNEST FLAGG AND W. B. CHAMBERS, ASSOCIATE ARCHITECTS.



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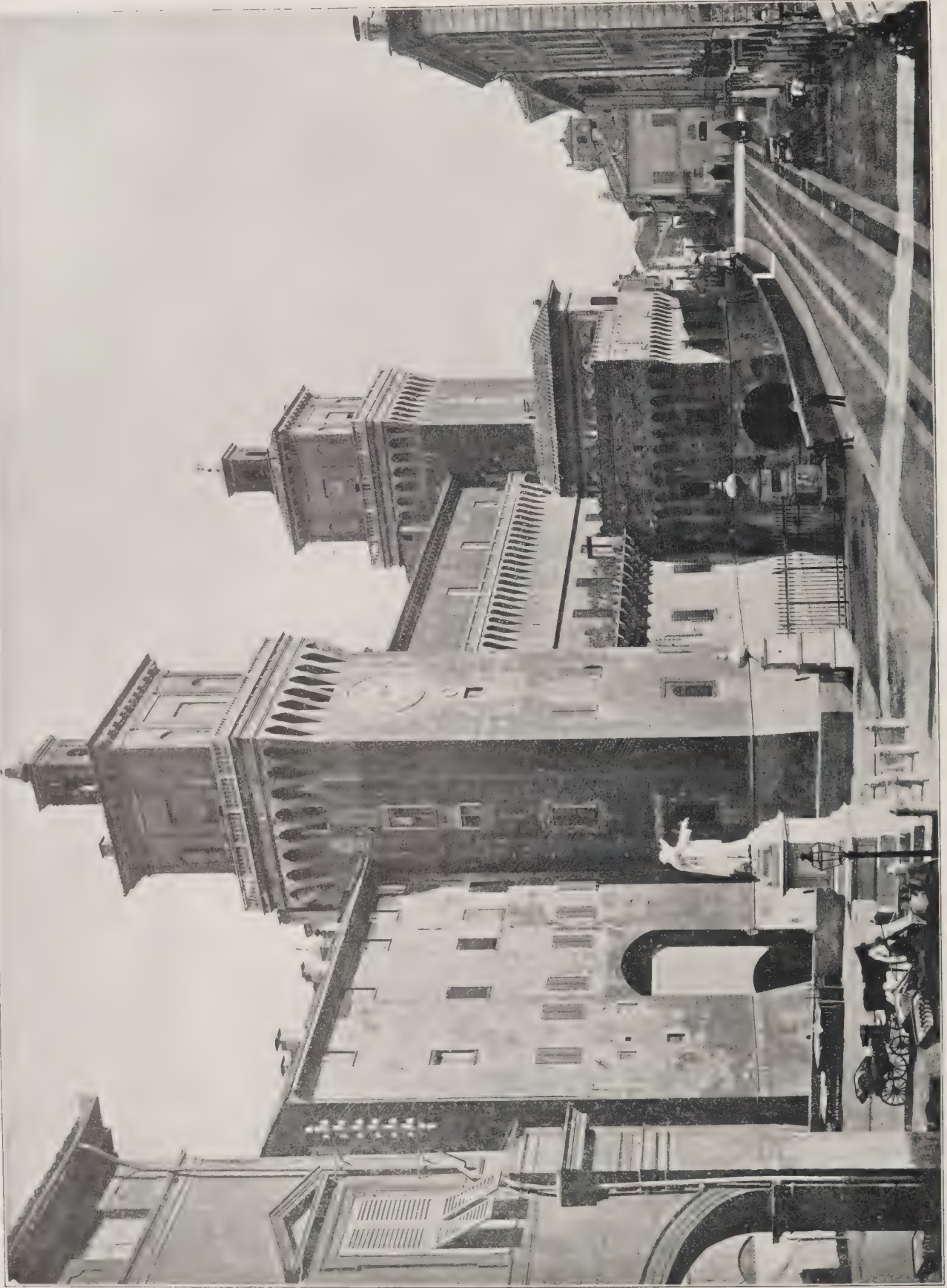


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THE BRICKBUILDER,

MAY,

1900.



THE CASTELLO DEGLI ESTE, FERRARA, ITALY.

VOL. 9
NO. 5

THE BRICKBUILDER

MAY
1900

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order : —

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Agencies.— Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
" Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
" Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

WE have received from a correspondent in Atlanta, Ga., a letter, enclosing a circular addressed to architects on behalf of the trustees of the masonic hall of the city of Augusta, Ga., inviting plans to be submitted under terms which we are sorry to say are not unique, but are none the less a reproach to the intelligence of the masonic body in whose name the invitation is sent out. The cost of the structure is limited to \$20,000, including architect's fees. The competition is open to every one, competitors being required to submit all floor plans and sections, together with ¾ in. scale details, besides which the unfortunate architect, who should be so misguided as to consider this as an opportunity for himself, is obliged to deposit a certified check for \$500, payable to the trustees, this check being deposited as a guarantee that the proposed building can be constructed under the plan of the architect within the amount specified by him, including architect's fees, and by a builder acceptable to the board of trustees, besides which the architect must guarantee that the structure shall be completed in each and all its parts and details so as to be ready for occupancy Oct. 1, 1900, including all such part or parts as are necessary to the completed building, whether or not provided for in the specification. And as if this were not enough, the board of trustees further reserves the right to reject any or all plans and bids submitted, and no premium or award of any kind will be paid the architects whose plans are not accepted. We cannot imagine any self-respecting, professional man lending himself in the slightest degree

to such an outrageous imposition as is implied in a competition of this sort. The function of the architect ought to be clearly understood by this time. In all our larger cities, and among men of intelligence who have made it their business to study the operations of modern civilization, the architect is looked upon purely as an adviser. He no more undertakes to guarantee the cost of a building, nor the quality of the builder's work, than a lawyer would undertake to guarantee the outcome of a trial or the depositions of the witnesses. We are inclined to believe that a circular of this description is due to ignorance rather than dishonesty on the part of whoever is responsible for it. Ignorance is hardly an excuse in these days, but the kind of ignorance which this may manifest puts a premium upon incapacity and deceit; for it is fair to say that if the building committee of this masonic temple are as ignorant as the circular might imply, it would be a very simple thing for an unscrupulous architect to put in a set of plans which were absolutely unreliable, which promised more than could possibly be carried out, and obtain the commission on the strength of these misleading plans, after which he could proceed to put up the building in complete defiance of the contract and specification, and make far more than his regular commission out of it, without the committee, in their ignorance, being any the wiser. We well recall an instance of this sort in the early days of Indiana, where a building which cost the county \$300,000 gave profits of considerably over \$200,000, which were divided between the architect and the builder. The restriction that the cost of the proposed building shall be dependent upon a builder acceptable to the board of trustees opens up a most wide and promising field for plundering the guileless architect; while the reservation that the board may reject any and all plans or bids submitted might be interpreted to mean that some architect was already selected, and that this competition, so-called, is instituted with the hope of obtaining some ideas which may be stolen outright. We prefer to believe that the committee is honest, but ignorant; that it wants to do the right thing by its constituency and get the very best results possible from an architectural, structural, and financial point of view. It is not to be hoped, after such a circular, that the committee would listen to any reasonable advice; but the only way to accomplish the results we would fain believe it has in view would be to make a selection of some one competent architect, to employ him as the committee's adviser, to pay him the regular rates, and to expect him to cooperate with, rather than compete against, the wishes of the board. The conditions implied in such selection are by no means Eutopian. They are what actually exist in cities like New York, Boston, and Philadelphia, and

are growing every year to be more and more the rule. The fact, however, that the architect in Georgia has to contend with conditions of this kind furnishes an illustration of the uneven terms under which architects are obliged to practice their calling.

We have noted this competition at length, not because, unfortunately, the conditions stated are unusual. In the country towns, smaller cities, and districts to which the full light of civilization has not yet penetrated we must expect these things for some time to come, and the evils thereof can only be mitigated by architects positively refusing to enter competitions except under proper and well-understood terms.

TENEMENT HOUSE CONSTRUCTION.

A BILL has just passed the Massachusetts Senate to be engrossed, which contemplates a letting down of the bars regarding the construction of tenement houses, a change certainly not to be encouraged. The bill has been strongly advocated by the Boston Real Estate Exchange, which, by so doing, has put itself on record as willing to sacrifice security and proper construction to questions of immediate pecuniary gain. It has been opposed by the Board of Fire Underwriters, by the Master Builders' Association, and by the Boston Society of Architects. Opposition of this sort ought to be sufficient to kill the bill.

The existing laws provide that within certain limits of the city all tenement houses shall be of fire-proof construction. This bill provides that a tenement house may be of second-class construction, that is to say, with brick walls, but with interior construction not fire-proof, provided it is not over four stories high, that not more than two families are accommodated above the second story; and, provided further, that the plastering is applied over some form of metallic lathing. According to the letter of the new law a tenement house may in first and second story be occupied by an indefinite number of families, provided there is not more than one family to each upper story. The old idea that height is any measure of the necessity for fire-proof construction dies very slowly. It is the opinion of nearly all experts that in the centers of our large cities nothing but fire-proof construction ought to be allowed under any circumstances, that mere height has nothing to do with the question, and that a fire started in a sufficient number of four-story constructions can sometimes do more damage than a single conflagration in a building twenty or thirty stories high. It is sincerely to be hoped that the societies which are opposed to the proposed bill will be able to make their influence felt in an unmistakable manner and secure its final defeat.

NEW courses in landscape architecture and architectural engineering have been instituted in the department of architecture at the Massachusetts Institute of Technology, to which college graduates and draughtsmen will be admitted as special students. Summer courses in elementary design and shades and shadows will begin July 5.

Proficiency in these subjects will enable draughtsmen and students from other colleges to enter third year

work, and give them an opportunity to complete the professional subjects in two years.

THE CASTELLO DEGLI ESTE, FERRARA, ITALY.

THE present aspect of the old Italian town of Ferrara reflects vividly the vanished glories of the famous house of Este, which was at the height of its power during the golden age of the Renaissance. Splendid picture galleries, great churches, and wide, straight, grass-grown streets remain to indicate the prosperity of the earlier days when the court of Ferrara attracted the most brilliant poets and artists of the day, and the gorgeous halls and salons, which are now seen by few strangers except the occasional wandering student, were thronged by the wit and fashion, not only of the Italian peninsula, but of all Europe.

The great castle, which raises its four lofty towers and massive brick walls from the center of the old town square, is easily the most conspicuous building in the city, and is one of the most picturesque and impressive buildings of the kind in Europe. The wide and deep moat which surrounds it is crossed by bridges which give access to the interior, and are furnished with all the mediæval paraphernalia of barbicans, parapets, battlements, and portcullis. Once within the walls, one will not encounter any one more formidable than the dignitaries of the local government, who now inhabit the chambers which once sheltered the powerful and relentless margraves of Este. Many a tragedy has occurred in the gloomy dungeons at the base of the towers, one of which Lord Byron has commemorated in his poem of "Parisina."

The castle is a most interesting example of the feudal architecture of north Italy, with its heavily corbeled machicolations, its massive walls, its projecting balconies, and gloomy archways. As is common in most of the towns of the region, the material is the red brick of the country, and there are few buildings in existence which better show the imposing effect of great, broad masses of the material. Bertolino Ploti di Novara is credited with being the architect, and the date of its construction is put at 1385.

Ferrara is one of the best of the brick towns of Italy. Situated in a marshy plain, the insalubrity of its location renders a protracted stay inadvisable, but such buildings as the Palazzo Costabili, the Palazzo Diamante, the Cathedral, and many others render a visit an indispensable part of a complete Italian trip, while nowhere will one feel the presence of the spirit of the Renaissance more strongly than while sipping one's vermouth at a table on the sidewalk opposite the walls of the venerable castle. Like its neighbor, Ravenna, Ferrara has much of the tomb-like feeling of a long since devitalized community which, while it is in a way depressing, still perhaps puts one in the best mood for studying the crumbling monuments of the past. The architectural student will find much good detail in Ferrara, not only in brick and terra-cotta, but in stone and wood. Many of the palaces contain remarkably decorated ceilings in paneled wood, and the capitals and pilasters of the cinquecento have a distinctly Ferrarese touch which is full of brilliancy and elegance, while in marble and iron the same unusually excellent standard is easily attained.

“Progress before Precedent.”

IS THIS MAXIM OF THE ARCHITECTURAL LEAGUE OF AMERICA
FINDING FAVOR WITH THE COMING MEN OF THE
MIDDLE WEST?

BY GEORGE R. DEAN.

THE expression “Progress before Precedent” was not used at the Cleveland Convention which resulted in the Architectural League of America, and to my mind does not express the character of the movement, if, indeed, by analysis it can be made to express anything.

Precedent in architecture has two very distinct and entirely different meanings. If that of slavishly copying the forms of ancient architecture is meant, let us say “Progress without Precedent.” If, however, the meaning is the following of the principles which led the great architects to produce monuments of art which we revere and fondly worship, let the maxim be “Precedence and Progress”; for Progress will follow, and we may hope, in the number of years which they required, to develop monuments as much greater than theirs as our civilization is broader, richer, and more powerful.

In the matter of construction we have arrived at the logical and true limit of our knowledge, and employ any and all materials which we find useful. We no longer refer to the methods of the great builders of ancient times. We have passed them. Our results in regard to construction are immeasurably greater. How did we accomplish this? By continuing to use their forms and attempting to move larger stones? No! We used our science and made stone, larger, better, and more lasting. We are able to span our high, thin walls without the use of flying buttresses, and we do not hesitate to do so. There is then no need of considering the question of construction, but only of the ornamentation of this construction.

There are those who say that there should be no ornament except structural ornament. I ask them, why? Is not the surface of a slab of verd antique one inch thick as beautiful as if it were a block four feet thick? Yes, it is until I clumsily try to make you believe it is four feet thick, and you feel the insult of my lie.

Let me show you its thickness, or not mention it in my construction, and you will see how fine a material it is. Let me in its surroundings delicately suggest to you its wonderful markings; let me by studied treatment enhance its depth of color and assist you to discover for yourself hues and tints you never dreamed of, and you will love that stone.

There are possibilities in surface decoration different and better than any that have ever been accomplished. It is preposterous to say that the art of the Greeks, or of any other race, cannot be surpassed. Has the human mind a limit? Does it in its evolution increase in science and decrease in art? If the world had been content with the speed of the Arabian horse the telegraph would never have been invented. We have taken unto ourselves gods of stone,—the Greek and Gothic temples,—have worshiped them and blinded our eyes to the one true god of art, that god which, in striving to attain, man worshiped when he builded the Parthenon and Notre Dame. We

have tried for centuries and have not attained these, our ideals, but we have approached them; when we approach as nearly those Nature-given inspirations, which flood our souls as we gaze on her handiwork, we will have an architecture.

I will not repeat the processes by which so great results have been accomplished, nor the reasons for our shortcomings. There is not a thinking architect but knows that the plastering of modern construction with stereotyped forms of ornament is an abomination. But his mind so long prostituted to many loves is incapable of a pure and holy inspiration. I will not carry the simile to the architectural professor, but there is not a thinking architect but knows to whom he owes his fall. The remedy is not in the reclaiming of the fallen ones, but in the rearing of a healthy generation.

There is, perhaps, only a branch of one art which occupies the position of architecture, in which the artists play the stock article to empty seats and damn the “in-artistic public”—the musical drama. If one half the inartistic effects and crudities impossible in Nature—so common in grand opera—were put on the theatrical stage, the presentation would be hissed from the boards. It is that lack of the fitness of things, that combination of attempted realism and grandiose conventionalization, which shocks the discerning mind. In literature we used to call it poetical license, but in literature it is no longer permitted.

What the young men of the League desire is an architecture free from vulgar importations. The American people are no more in sympathy with the modern French architecture than they are with the life on the French boulevards. Our young men are coming from the schools of Europe with every natural instinct blasted, and filling our cities with monstrosities. We are rearing universities, and are proposing to build greater, wherein the young minds for generations to come will be instilled with the lowest expressions of Nature, misrepresentations of plant life, forms incapable of existence, deformities grown in poisonous caves, horrors of the animal kingdom with vegetable tails. This is no exaggeration; you may see it all about you. It is not architecture; it may be art in caricature, a form of art too low to be classed with the earliest and greatest of all arts.

The young men of the League do not wish to banish from their lives all early architecture. They stand for the same methods employed by the builders of the vital styles, namely, the artistic expression of what is about them. They do not believe it necessary to make bad drawing because the architects of the Middle Ages could not draw. They do not think it necessary to reproduce horrid monsters because they were a part of the life of the ancients, nor cut in stone vulgar expressions of plant forms because they were so cut by degenerate peoples. Neither do they sympathize with those who go about with complete rules for the production of art, who talk of occult symmetry, and know not the difference between the expression of an emotion and the spacing of black and white. They feel that these matters of rhythm of movement of upward tendency are matters of small importance compared with the true expression of an emotion, that they pertain to the individual, that these things are the unconscious ripples in the stream of thought. They

are the gestures of the orator. Too much training in these matters, with neglect of the great principles, with lack of knowledge and assurance that there is something to be said, and the pressure from within which compels the saying of it, will result in the sterility of the boy from the oratorical school. Not all poets speak in verse, and among those that do there may be a Poe as well as a Holmes. They desire simply to give expression to their interpretations of the higher and nobler phases of Nature, and to do it in their individual way.

The strongest argument against the possibility of a national style has always been that it is no longer possible to keep out influences of a conflicting nature. That the Greek architecture was possible because of the peculiarly close civilization which permitted of an uninterrupted growth. The coming men propose to keep out these influences by mental rather than physical means, believing that better results will be obtained. They do not hope for immediate results; they realize that few men in any generation have the genius for great works. They believe that in time these men will appear, and that the incapables will be weeded out. That the time will come when men will choose the art from their fitness, and not hesitate between architecture and medicine as they might between dry-goods and groceries.

In their own work they see their improvement; they realize how they are hindered by their early training, and they are full of hope. They are at times cast down, as when they see such exhibitions as the one at Chicago this year, and the book of the exhibition which is worse. But they realize that club politics and individual incapacity are always rampant, and take new heart. The fact that the club was able to produce a book at all without the aid of advertisements speaks volumes for those who had the work in charge, and shows the interest the people take in architecture.

Not that the exhibition is worse than those which preceded it, but the opportunities were greater. The Chicago Architectural Club was a prime mover in the League, formed, as its constitution says, "To encourage an indigenous and inventive architecture, and to lead architectural thought to modern sources of inspiration."

The club's action in crowding the exhibition and book with the trite architecture of the past to the exclusion of the many good things done throughout the West during the last year is inexcusable from the standpoint it has itself taken. The club should appoint each year men of discernment and innate artistic worth, men capable of forming a heart judgment, men who know a good thing, whose duty it shall be to search out those things which have merit, and on the walls and in the book give them such place that the public may feel the importance of the movement and know for what the club stands. The generosity of the patrons made all things possible; through timidity and fear the club betrayed a sacred trust.

Whatever disappointment we feel, we must not attach too much importance to a slight defeat. The architecture has come to stay. It is traveling faster and with less friction than did the same movement in painting and sculpture upon which we are successfully riding toward a high and noble art.

Those who have felt its force are carried irresistibly with it and have no fear in trusting themselves to its power.

Already the professors in our schools are confessing to bad methods and are seeking for better. The architectural journals are printing articles they refused a few years ago, and best of all the architect finds the American artisan capable of perpetuating his thought in lasting material. It is safe to say that the number of young men in the Middle West who are working on these lines has more than doubled in the last year. Many of these, being men who in the true sense have never designed, are very much at sea, and are simply copying the works of others as they copied from older forms. This is to be expected, and is to my mind far better than the old way. It will correct itself when the people discriminate between the original and the copy as well as they do at present in painting.

The following letters were received in reply to a request for an expression of opinion upon the general subject, considering not only whether the maxim of the League finds favor with the coming men of the Middle West, so much as what is the best view to take of the subject itself:—

ROBERT D. ANDREWS, BOSTON.

In reply to your request, let me say that the maxim in question seems to me a very good sort of rallying cry for the fighting contingent. Of course we all know that the standing ground of progress is precedent; but the question is, In which direction shall a man most turn his face, — forward or backward? "Progress before Precedent" seems to be identical in its sense with Mr. Hale's maxims, — "Look up, not down; look out, not in," etc.

The scientific study of the arts and their laws of development is a wholly modern one. M. Gustave Le Bon's "Psychology of Peoples" contains much regarding the organic history of art that is worth knowing, and I commend the volume, together with the first chapter of J. A. Symond's "Greek Poets," to the attention of Mr. Dean.

C. H. BLACKALL, BOSTON.

The maxim sounds good, but like all epigrammatic expressions is right or wrong, depending upon its interpretation and application. To disregard precedent is a pretty sure way to progress in the wrong direction. To assume that progress and precedent are irreconcilable is to be blind to the teachings of all history. To suppose that there can be progress without regard to precedent is to court a laborious waste of good endeavor, with probable failure. The right kind of precedent will never check progress, and if architecture has reached such a condition as has seemed to inspire Mr. Dean's article, it is time to do something besides casting away precedent. Rather let us see if we have not been following wrong precedents.

GLENN BROWN, WASHINGTON.

Progress has always been founded on precedent. No great art movement has grown from nothing. Following precedent does not, and should not, mean a slavish copy of existing work. It does not mean bodily transplanting incongruous elements into a community or location with which such elements have no harmony or fitness. It does not mean, for instance, the placing of Parisian build-

ings in communities which are neither Parisian by inheritance, feeling, sympathy, nor climate.

Precedence for progress should be guided by the principles which governed the design, objects, and ends of the original designers, the utility of the building or the arrangement of the plan, the masses of the elevation, the lights and shadows, not by the mere copying of extraneous and often meaningless and meretricious details.

Careful study of precedents will lead to a proper and progressive advance, while superficial study of precedents will usually eventuate in the selection and improper use of subordinate features with the mistaken idea that in such details consist the broad elements of design. Truth and unity, the motto of the American Institute, should govern all design, in which case we will have progress with precedence.

WALTER COOK, NEW YORK CITY.

It is fortunate, I think, that the formulating of maxims, such as "Progress before Precedent," is usually an entirely harmless recreation, and exercises no great influence upon any individual. We may easily proclaim to the world that we are about to be progressive and original; but originality is not so easily attained. In architecture, at least, it should be the consequence of new conditions, new requirements, and new influences, which force a new solution of his problem upon the designer, whether he will or no. If the result is beautiful, he has achieved originality; if not, he has achieved nothing. No architecture worthy of the name has ever been produced by men who proclaimed beforehand that they were going to despise precedent and achieve a new style; and it has been said, with both wit and wisdom, that only mediocrity is ever wholly original.

WALTER B. CHAMBERS, NEW YORK CITY.

There is a kind of criticism which we Americans need far more than the diluted Ruskinism we are wont to serve out to each other. It is that heard so often in the Ateliers of the École des Beaux Arts: "*Quand c'est bien c'est bien, et quand ce n'est pas bien ce n'est pas bien.*"

No people in the world are more easily hoodwinked than we are by purposeless, pseudo-artistic theorizing. The gravity with which we give it open-mouthed attention contributes materially to the gaiety of nations—other nations. There's no denying it, we dearly love to talk.

If the energy which we lavish upon a discussion as to the real value and proper interpretation of the motto "Progress before Precedent" were devoted to a close study of architectural problems, viewed in the cold, logical light of structural and practical requirements, we would be more sure of making the right kind of progress,—that based on the same precedents as those which have inspired all the great architectural creators,—sincerity of purpose, horror of sham and pretense, contempt for imitation. These are qualities with which an artist's mind must first be armed in order to cope successfully with the all-engrossing problem of how to envelop modern practical ideas in live artistic forms.

Our greatest need to-day, in the schools and in practice, is a proper understanding of the principle that honest, practical, and structural necessities are invariably

the matrices out of which are developed the true solutions of their artistic treatment.

FRANK MILES DAY, PHILADELPHIA.

The value of the expression "Progress before Precedent" as a working maxim for the architect depends entirely on the way he interprets it. If by progress is meant that true, healthy progress which comes from a sane plan, frankly arranged to suit the life of the building, and from the growth of this plan into a structure which naturally and beautifully expresses that life, then by all means let us have "Progress before Precedent."

If, on the other hand, progress is mistaken to mean a mere striving for originality, an effort to say an old thing in a new way for the sake of the novelty of that way, rather than for the sake of its excellence, then let us adhere to precedent, but even then we must have the discernment to distinguish the good from the bad in precedent.

WILSON EYRE, JR., PHILADELPHIA.

With regard to Mr. Dean's article, which is most interesting, I would say that I agree with him as to our being overburdened with the outcome of education in the French schools. Our own schools, however, are growing in importance and will soon be all-sufficient, and although the French style now in vogue in so many parts of the country is not, to my mind, a very sympathetic or lasting one, it will be interesting to look back upon as a period.

I have never felt that influences alter the big motive forces in artistic development to any great extent, or for any length of time. Schools, fashions, and laws are but temporary checks or helps. The work of "the rank and file" is dreary enough, given the very best periods, and it is only the work of the few that makes the history of art. With these the style and influence of their day is a secondary consideration.

ERNEST FLAGG, NEW YORK CITY.

I think all such articles do good; they serve to agitate and arouse interest in the subject. They call for thought; and the more properly directed thought which is given to our architecture, the better it will be for the art. I hope that the more thought that is given to the subject, the more clearly it will be seen that what we need most is the application of logical reasoning to our designs. I should like to see materials used in a logical way, and a tendency to abandon the shams and makeshifts which are far too common in American work. As I write this I see from my window a great galvanized iron cornice with stone profiles surmounting a granite building.

If there is anything to criticize in the article, I think it is the strain of too great satisfaction with what we are doing, which crops out from time to time. We are too well satisfied with ourselves. We would do well to be more conservative and not brush aside precedent too lightly. I hope for the time when the principles which guided in the making of the great designs of the past may be sought for and applied humbly to our own work. What we need is not servile imitation,—we have too much of that,—but more careful study, and that logical and truly artistic use of the material and appliances at our disposal which characterizes and makes admirable the work of the great architects of the past.

ROBERT W. GIBSON, NEW YORK CITY.

It seems to me that in their praiseworthy desire for active work, the originators of this motto have overlooked the meaning which older men would attach to it, and have said something they did not intend. As a protest against that dull regard for precedent which prevents progress, their purpose is laudable, but as a declaration that progress is desirable, with little or no regard for precedent, the maxim is not only harmful and misleading, but comes nearly to being absurd, because the word "progress" itself suggests a moving forward by degrees, with growth and improvement, all of which involves the idea of precedent as a basis for each successive advance.

So much for the attitude of the League toward the world as expressed by its motto. There is another side which I think deserves criticism. It is likely that students and younger members, who are the people most impressionable in these matters, will understand the words to be a kind of declaration of independence in architectural design, and will think that their leaders have resolved that variety and change and newness are to be less controlled than formerly by precedent and established custom. I believe that such declarations really do influence young people, and in this case I think that the teaching most needed is the very opposite, and that if the motto were made to read "Precedent before Progress," it would be more productive of good, but I do not seriously propose this, because it is rather an even balance of different motives, than the preponderance of any one, which is most to be desired.

CASS GILBERT, NEW YORK CITY.

I agree with the maxim, "Progress before Precedent," but with the understanding that the progress must be real, intelligent, and *forward*. There is such a thing as progress backward, and such catchy phrases are sometimes dangerous. That a knowledge of precedent does not necessarily impede progress, is self-evident. Progress demands both an intelligent knowledge of present conditions and of precedent. The maxim implies antagonism between those who believe in progress and those who study precedent. Such antagonism does not exist in reality.

JOHN GALEN HOWARD, NEW YORK CITY.

"Progress before Precedent" seems to me a startling alliteration based on no real foundation of meaning and calculated to do a vast amount of harm to our profession if taken seriously by any considerable body of young architects. Progress before precedent? Progress from or beyond what, pray, if not precedent? Let us have progress by all means, but let us base that progress, measure it, dignify it, justify it, by that precedent which is our indestructible heritage from the great of all time. He is a spendthrift and a fool who, on setting sail upon the ocean of a career, strips his sheets, chops down his masts, and fires the hold.

W. L. B. JENNEY, CHICAGO.

Undoubtedly the maxim is a good one. We should not be blind copyists. The precedent should be considered in its true spirit as Mr. Dean states, whose article I would generally indorse.

The styles of architecture were influenced by the requirements, — the habits of the people, the material at hand, the religion, the precedence in the neighborhood or within reach of the designers. To-day we have materials that were but little used in buildings in ancient times. Principally steel, which enters so largely into most of our commercial buildings, and which, even in a great church, or cathedrals, could be used very advantageously, instead of the old style masonry.

Referring to the old rule, ornament your construction, but never construct ornament. In this sense ornament should be used to accent the construction as well as to make it more agreeable to the eye. Another old principle, the fitness of things, should be followed conscientiously. The desire of the League "to free architecture from vulgar importations" is certainly highly commendable. The statement that "our young men are coming from the schools of Europe with every natural instinct blasted, and filling our cities with monstrosities," is certainly not true of the best men, who are aiming at quiet dignity combined with elegance and beauty. There are certainly no want of examples of the "lowest expressions of nature, misrepresentations of plant life, forms incapable of existence, horrors of the animal kingdom with vegetable tails." Examples of this can be found in old Renaissance work and in the rococo. It, however, belongs to decoration only.

In regard to the argument as to the "possibility of a national style," — that could only be produced by a large number of our best architects working for a long period in one direction, each trying to improve, and making the style more thoroughly adapted to our requirements. As it is, one style after another comes into vogue and good work is done, but before the style could with any reason be called national it is dropped, and another takes its place.

In the future much must depend upon our schools. They are already numerous and in the hands of able men. Literature and reproduction of photographs, with appreciation and justifiable criticisms, are contributing much. I agree with Mr. Dean that the number of young men in the Middle West who "are working on justifiable lines has more than doubled in the last year."

CLARENCE H. JOHNSTON, ST. PAUL.

I have scant sympathy for the term, "Progress before Precedent." To me it is peculiarly obnoxious; from such a sentiment has sprung the architectural aberrations of this country. The thought is opposed to reason and common sense.

I cannot conceive of success in an art so difficult to master as that of architecture, without the most strenuous study of precedent. It is the foundation stone to build on. From knowledge only of what past masters in architecture have done can progress be made. The broader this knowledge is, the keener the insight of principles that are sound and vitalizing, the better equipped will the artist be for his own work.

GEORGE D. MASON, DETROIT.

To *literally* adhere to such a sentiment as "Progress before Precedent," at least from an art standpoint, is, in my judgment, a mistake.

The concensus of opinion of a body of educated men is a standpoint from which the best of argument can be based. The particular kind of "education" referred to combines the knowledge gained from experience in developing the best of the older forms of artistic expression, and in the subsequent careful comparisons made, and deductions determined upon, when the old and the new are placed side by side.

Art, generally speaking, is not as exact as a science, and artistic deductions cannot be arrived at with the mathematical exactness that can be obtained from an engineering standpoint. Reliance must therefore be had on the judgment of the artistic minds that have received the commendation of the majority of the men who by education, training, and native ability have approved of their work.

The one who is the most successful in combining the best ideas from the standard forms of art, as so recognized, with the multiplex requirements of a modern civilization, is in my estimation the greatest artist. We must not uphold the one to the exclusion of the other, nor feel that the ideas of the present generation of artists are the only fountains that pour forth the absolutely pure article. We might argue quite differently from an engineering standpoint, but with art it is quite a different matter.

ROBERT S. PEABODY, BOSTON.

It is hardly possible that any designer would find fault with most of the general principles that are upheld by your correspondent. They do not seem to me new, and they are generally accepted.

But when he objects to the use of those forms of expression that have been evolved by many generations of artists, and which still are in process of evolution, then I hope and believe that nearly all of us disagree with him.

It does not seem to me to be of the slightest importance whether we ever develop a distinctly American style in architecture with original and native details. I take no interest whatever in that as an end for which to strive. It does, however, seem to me to be of the first importance for our civilization that our towns should be pleasant places of abode, and that our houses and churches and public monuments should be dignified, quiet, modest, interesting, and refined. To my mind, there is a far better chance of this being accomplished if our designer humbly works upon forms that have been found good by all, and does not endeavor to revolutionize art single-handed. In the long run, even thus, we shall have all the local expression that is worth keeping. This is the course artists worthy of the name have followed hitherto.

The enthusiasm of youth is such a precious thing that few would wish to suppress it, but I think it has, and I am sure the work it inspires will have, an added grace if it is accompanied with reverence. I do not believe we can, with advantage, abandon the use of accepted conventions in design; and my opinion is that the professors of architecture so much criticized by your correspondent are doing a much-needed work.

IRVING K. POND, CHICAGO.

One hardly could make any remarks on the general subject without taking cognizance of the leading paper

which in this instance, it seems to me, has "nothing to do with the case." As to the application to it, of the strictures on the poor catalogue makers, I am in the dark, and I am equally blind as to just how nature study is to inspire a new architecture any more than it did an old (which it never did). Architecture is, and always has been, from within; nature, except human nature, is external. As to the meaning of the very general phrase, "Progress before Precedent," some few may know a little, but many more will care less. Perhaps a "Don't Worry Club" would be a good thing among the younger architects. Men who have not lived long enough or deep enough to have developed rich or lasting sentiments need not worry as to what those sentiments may be or how they should be expressed. Time will bring to those who are worthy a realization of them and of the possibilities of their expression. The action of time may be accelerated by the advice of experience, which none but a fool disdains. In any art which means self-expression, or indeed in any avocation, we will be, according as we are, and we are what the past has made us. This does not argue that our future course is absolutely set for us, but that we are developed from the past; and what is true of a man or an architect, is true of the great body of men or architects. No new germ springs into existence, but all is the logical development of the past. Don't worry; the future will take care of itself with, or in spite of, us.

BRUCE PRICE, NEW YORK CITY.

I could not fall into the vein of the article you speak of, tending to anything that I was in sympathy with. Men banding and leaguering together never lead to much. Of course, in an art such as architecture the individual is no more than a grain of corn on the cob; progress and beauty in architecture is the result of the combined intellectual effort of intelligent minds; no man yet has risen above it. The best work has come in periods of wealth and extravagance, for public opinion applauds the artistic effort, and consequently makes fruitful soil for the growth of artistic work.

The business side, of course, of the League, is another thing, but to bring out beautiful work men must work for the love of it, and for the inspiration that comes from a congenial undertaking.

EDGAR V. SEELER, PHILADELPHIA.

"Progress before Precedent." The misfortune of this recently exploited phrase is undoubtedly that it places "Progress and Precedent" in opposition. To divorce the two is unnatural and unnecessary. Those who disregard precedent handicap their efforts to progress quite as seriously as those whose sole direction comes from a slavish following of precedent. The best that any one can do, whatever its motive, whatever its application, is so slight, so infinitesimal by itself, that it becomes pure arrogance to attribute to it a place apart, or to count it more than a single phase of the great development of which precedent is the summation, down to the very last previous demonstration.

ALFRED STONE, PROVIDENCE.

"Progress *before* Precedent" is, to the writer's mind, an exact reversal of the proper sequence, both as a state-

ment and as a logical evolution in the development of the best in architecture.

A reverent — not slavish — study of the architecture of the ages is as necessary in the training of an architect as the study of the literature of the past is a necessity for one who would express his thought in the graceful imagery of poetry or poetic prose, or in terse and forceful language. No matter how radical the thought or how advanced the philosophy, the *words* in which they are uttered are not new, and the construction of the sentences must conform in the main to rules of syntax and grammar which are the growth of centuries, each one of which has contributed but few new words to the vocabulary, and has but slightly changed the method of expression.

In architecture we find the monstrosities which offend are more generally perpetrated by those who despise the past and are so imbued with the divine afflatus that they, out of their own superior inspiration and inward consciousness, can create in the span of their own short but glorious career a new and national — an American — architecture! Pride, which cometh before a fall, seems to be the prominent idea which finds expression in the motto, "Progress before Precedent," and smacks little of that respect for the great masters of many epochs, whose works have survived the test of time and have won the admiration of generation after generation of those most sensitive to artistic influence.

With new methods of construction new methods of architectural expression will be invented, but only step by step, and many will press for recognition, but few will be chosen, and they will be of those who humbly adhere to precedent, but at the same time are able to engraft some new idea upon the old which will fructify and prove acceptable and hold its own with that which can never die.

R. C. STURGIS, BOSTON.

Mottoes are not, as a rule, of much service, and are quite as apt to be misleading as to help. What is meant by "Progress before Precedent"? Who is to judge what is true progress? Often true progress seems like a backward step; often what seems progress is a retrograde movement. Precedent is of infinite value and hardly to be over-rated, and yet if clung to too closely, it may hinder progress, deaden enthusiasm, and kill life. A young Englishman recently complained to me quite bitterly of a criticism of one of his works which had appeared in an American magazine. The work in question had defied all architectural precedents, and was but a forced straining after originality; but the author thought that if such original work was not understood and appreciated there could never be any progress. The best progress is that which is founded most clearly on precedent.

LOUIS H. SULLIVAN, CHICAGO.

In my judgment a maxim or shibboleth, such as "Progress before Precedent," is in itself neither valuable nor objectionable.

The broad question involved in the advancement of our art is one that lies specifically with the rising generation, and it will answer in its own way, — theory or no theory, maxim or no maxim.

If the coming men possess in a high degree the gift of reasoning logically and unwaveringly from cause to effect, the rest, practically without qualification, will take care of itself.

The present generation does not possess this gift, nor does it trouble whether or not; hence chaos. That the younger men have it is, as far as I can observe, quite conjectural. Talk and good intentions we have, but talk and good intentions do not build beautifully rational buildings. Talk may be had for the asking and good intentions become pavements here as elsewhere; but delicate clarity of insight, sturdy singleness of purpose, and adequate mental training are notably so rare in our profession as almost to be freakish. We have muddy water in our veins.

I am an optimist, and live ever in hope; yet what I wish and what I see are by no means identical. Still, doubtless, there is a ferment working that we wot not of. I would discourage no one in the belief.

Finally, when all is said and done, the architectural art is a proposition too easy or too difficult, just as you choose to regard it. It is an art as yet without status in modern American life. Practically, it is a zero.

PETER B. WIGHT, CHICAGO.

The Architectural League of America, in adopting its motto, evidently intended to epitomize the sentence from its constitution which Mr. Dean quotes. The meaning of that is plain. But, while all art that is not copied is "indigenous," whether it be good or bad, it is questionable if it is desirable to put too much emphasis on the encouragement of an "inventive architecture." We have not only had too much imitation, but too much invention. The "modern sources of inspiration," referred to in the second part of the sentence, by which our "architectural thoughts" are expected to be led, are the counterpart of "precedent." This is only another way of saying that true architectural progress is the natural result of evolution, and it matters not from what it is evolved so long as it is true. I do not agree with Mr. Dean that we have arrived at the logical and true limit of our knowledge of construction. But it is clear that we have invented some new constructive methods, for which we will have to find a system of decoration which will least interfere with the expression of their proper functions. If progress is more important than the following of precedents, we will think more of giving expression and external beauty to the constructive materials we employ than overlaying them with designs taken from the works of the ancients; and that seems to be about the whole story.

FRANK LLOYD WRIGHT, CHICAGO.

George Dean is right. An alliterative slogan is trite at best. His feeling against the present hidebound condition of architecture as a fine art, and his hope for its future, are characteristic of a growing group of young men in the Middle West, and will be indorsed by thinking architects who have trifled with the husk sufficiently and are hungry for the substance.

Regarding the book of the exhibition he is also right. As bookmaking, it was bad, and characterized by the same desire for quantity regardless of quality that cheapened the exhibition itself.

But the book did broaden the basis on which future books are to be built. It got itself born without chucking the huckster beneath the chin. It carried the work into civics. The fact that it inaugurated its civic phase in rather blatant fashion was not enough to damn its motive, which was good.

And Dean, — Are you not just a little harsh and unreasonable in calling for fruit from seed planted the day before yesterday?

WYATT & NOLTING, BALTIMORE.

A preferable title as a motto would be, "Precedent and Progress." Neither the science nor the art of any age or people can really progress without the slow and careful building on precedent, and the acceptance of principles and modes of expression universally accepted after centuries of experience and slow growth toward perfection.

A method of construction and design, although successfully meeting the social and commercial requirements of a generation and a locality, may not necessarily imply progress toward higher planes beyond that, which, resting on the "everlasting hills," has been attained by architecture and all art over the civilized world, and has met with the approval of artistic and cultivated intelligence for centuries. This is applicable to either classic or Gothic architecture, or any other so-called "style" which is the result of the highest human intelligence. For the "man of the Middle West" (whatever that may mean), to cast aside certain methods of expressing certain facts in architecture, which he may learn from the best academic teaching, would be very much like the orator or poet who would throw aside his grammar, or the painter his brushes and colors, notwithstanding the fact that the "Middle West young man" has apparently often done exactly this thing. We would suggest that, before writing and theorizing more on the subject, he would produce actual work by his proposed methods, which will be accepted by the art world as superior to that produced by the training of either the European or American schools. We think the editorial in the *American Architect* of May 5, on this point, covers the ground admirably.

THOMAS C. YOUNG, ST. LOUIS.

It is difficult to understand exactly what is meant by the phrase "Progress before Precedent"; nor does it appear to be very clearly defined in the mind of the author of the explanatory article.

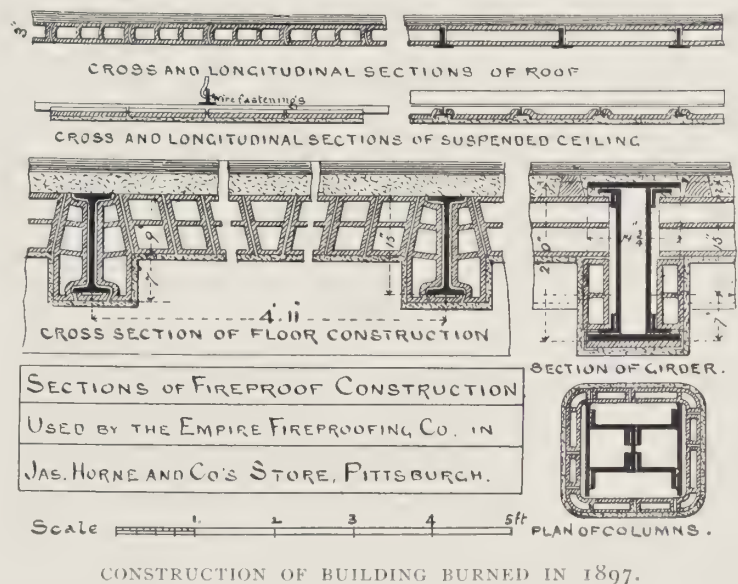
I can see no harm in the young men attempting to invent a new style. No one has succeeded heretofore, but no doubt it can be done if they try real hard. If successful in producing something new and really good, it is sure to receive proper recognition, but until this is accomplished it would seem in better taste to speak less disparagingly of the great men who have accomplished something in architecture in the past. I have, as yet, seen no indications of a new and brilliant style in the Middle West, and yet, on the whole, I think American architecture has made quite a healthful progress in the last twenty or twenty-five years, and probably will continue to do so for some time to come.

Fire-proofing.

The Second Fire in the Horne Department Store at Pittsburgh.

BY PETER B. WIGHT.

THE BRICKBUILDER for June, 1897, gave a detailed and circumstantial account of a great fire which occurred in Pittsburgh on the 2d and 3d of May in that year, in which the destruction of a large grocery house caused serious damage to three other buildings, all of modern construction, and fire-proofed according to three different methods. One of these, the large six-story department store of Joseph Horne & Co., was of steel skeleton construction throughout, having an exterior mostly of brick and terra-cotta, and interior construction and protection to the steel frame of hard fire-clay tile throughout. It was the severest test of modern steel and tile construction on record. It demonstrated that hard fire-clay hollow tile, even when used without scientific application, and in its lightest and thinnest form, was



CONSTRUCTION OF BUILDING BURNED IN 1897.

sufficient to preserve a steel skeleton of a building from destruction, even though it might not preserve its own integrity in a burning building. The sequel showed that the damage to the steel frame was due to other causes than defects in the fire-proofing material used, for, in the reconstruction, most of the steel structure was retained, the parts that were renewed being those that had been either directly or indirectly damaged by the fall of a water tank on the roof which had been insufficiently supported. Though the stability of the enclosing walls was not seriously affected by that fire, a certain amount of patching was required, and rather than submit to this the owners preferred to rebuild the whole of the exterior according to a new design, the former architect having died; and Messrs. Peabody & Stearns, of Boston, were employed to reconstruct the building. At the same time it was sought to improve the fire-proof work, which, it had been demonstrated, could not save itself, and only to use such of the perfect floor-arch material as could be saved, in reconstructing the first floor. Hence the first

floor, covering the basement, was built as before, partly with the old fire-clay tile and partly with new red shale hollow tile of the same sizes.

The contract for all the hollow tile work (hard tile being specified) was taken by the Pittsburgh Terra-Cotta Lumber Company. This company is of old standing in Pittsburgh, and had contracted for all the fire-proofing of the Horne office building, which was also partially burned in the same fire in 1897. In that building it had used a singular article of manufacture, which, when I examined it, I pronounced to be a semi-porous terra-cotta, made of a red shale clay, which has to be burned at a higher temperature than the ordinary red clays, and can be used with a limited amount of sawdust. The material, therefore, was not what is commercially known as porous terra-cotta, but one which is a medium between that and hard tile. It possessed the two qualities of toughness and strength. In the Horne office building, it was only in a very few instances that I found an arch tile cracked, and the only damage to the tiles was found where two faces and a corner were exposed, as in the coverings for beams projecting below the ceiling. I then pronounced it the best clay fire-proofing material that had yet been produced, and think so still. It is, therefore, remarkable that the same owners should have required that hard tile be used in the reconstruction of the department store, and it is no fault of the contractors that it was used. The name of the Pittsburgh Terra-



CONSTRUCTION OF BUILDING BURNED IN 1900.

Cotta Lumber Company has been changed since the reconstruction to the National Fire-proofing Company, and I have been informed by the president of that company that in making the hard tile for the new work only a small proportion, about 10 per cent., of sawdust was used. This explanation is due to the contractors in view of some facts which have appeared in the recent fire.

In the reconstruction, the floor arches of the first story were replaced substantially as they had been before, the beams being covered independently and showing about 7 ins. below the ceiling. The floor arches of all the other floors were rebuilt with 9 by 15 in. end pressure tiles, each tile having three air spaces in its height and two in its width. The outer shell was about $\frac{7}{8}$ in. thick and the dividing webs $\frac{5}{8}$ in. thick. The bottoms of the arches were set 2 ins. below the bottoms of the 15-in. beams, and the soffits of the beams were covered with 2-in. dovetail-shaped tiles hollowed out on the upper side for an air space of 1 in., next to the beams. The girders throughout were covered very nearly the same as in the former work. The soffits were covered with $1\frac{1}{2}$ -in. tiles,



FIG. 1. FIRST STORY LOOKING NORTH, SHOWING DAMAGE BY SMOKE AND WATER ONLY. THE SMOKE AND HOT AIR CAME FROM FIRE IN BASEMENT.

hollowed out $\frac{5}{8}$ in. on their top sides, next to the girders, and supported by steel clips on both sides to the girder flanges. The edges of the girder flanges and soffit tiles were then covered by L-shaped tiles $1\frac{1}{2}$ ins. thick, resting on the flanges also, and the sides of the girders were covered up to the ceiling line with pieces of 3-in. partition tiles. The stack of four passenger elevators in the center of the long dead wall which forms the east side of the building is enclosed with a 6-in. hollow tile partition, all the way up, having iron doors, with grills in the upper panels. At each end of the stack of elevators is an open iron stairway from the first to the sixth floor, built against the wall. At the rear or north end of the building next to the alley are two freight elevators and two iron stairways, all enclosed in 6-in. hollow tile partitions. The only other partition is that built around the kitchen, which was located in the sixth story. The Z-bar steel columns, which are continuous from the foundations



FIG. 2. SECOND STORY LOOKING NORTH, SHOWING ONLY SLIGHT DAMAGE BY WATER.

to the roof girders, are covered with 3-in. hollow partition tiles built like partitions, with eight tiles to a course and alternately breaking joints. The corners are angular and not rounded, as in the previous construction. These column covers are not fastened to the columns or bound together, and are built from the top of one girder to the bottom of the next one. The column covering is not continued above the suspended ceiling of the sixth story. The roof, or that part of it which remains, is built with 10-in. I-beams resting on 20-in. I-beam girders. T-irons are set between these, 18 ins. from centers, and 3-in. book tiles rest on their flanges. The book tiles carry a concrete filling and a weather-proof covering of roofing felt covered with 1-in. thick tiles laid in Portland cement. Thus it will be seen that the columns above the ceiling, the roof girders, the roof beams, and the T-irons are exposed on the under side. In the old construction before 1897 they were also exposed, but the ceiling was constructed with 1-in. thick porous tiles fastened to suspended T-irons. The same method was used for the



FIG. 3. THIRD STORY, SHOWING FOURTH AND FIFTH ABOVE AND FIRST STORY BELOW LOOKING NORTH. THIS FLOOR ONLY DAMAGED BY WATER.

sides of the well holes around the skylights. A large part of this ceiling remained intact after the fire, and that part of the ceiling and roof that was destroyed failed only on account of the falling of the water tank, which let the fire in between the ceiling and roof, and parts of the front and rear walls were thrown down by the expansion of the continuous steel roof girders.

In the present construction the suspended ceiling (what is left of it) is made with angle irons, supported from the roof by suspension rods, and plastering on expanded metal, which is lashed to the angle irons. This is all the protection that was afforded to the construction above the ceiling line.

In some other respects the building differed from what it had been in 1897. The skylights, of which there were eight on the roof, were all glazed with wired glass, and the glass now remains, only more or less cracked, in



FIG. 4. FOURTH STORY LOOKING NORTHWEST. CONTENTS BURNED OUT.

all of them that did not fall bodily with the fall of the rear half of the roof.¹ The large light well in the center of the building, from first floor to roof, was enlarged by being made longer and having semicircular ends. An opening was made in one place through all the floors to the basement, about 3 by 4 ft., for a patent conveyer, kept running constantly to carry goods up and down.

The front windows are smaller than before, reducing somewhat the exterior exposure. The rear windows have "standard" wooden shutters covered with tin on both sides, which were only effective in preventing the firemen from playing in water at that end, where the real hot fire was.

This building had a full stock of the goods usually found in department stores. The sixth and highest floor was used for a restaurant in the front half, and the storage of extra stock in the rear half. A large kitchen was

¹ The large skylight over the light well, of wrought iron and wired glass, fell bodily during the last fire.



FIG. 5. FOURTH STORY LOOKING NORTHEAST. CONTENTS BURNED OUT.

situated on this floor on the west, or 5th Street side, about halfway between the center and front, and was surrounded by a 6-in. hollow tile partition.

On Saturday, April 7, just before midnight, the light of a fire in the building was seen by a policeman in the street, though three watchmen were in the building, and only learned of the fire by the advent of the fire department. There is a difference of opinion as to whether the fire started on the fourth or fifth story. The internal evidences seem to show that it started on the fourth floor, near the north end of the light-shaft, and licked its way over the edge of this shaft to the fifth floor, then extended around the fourth floor to the front, while, through the draught caused by the central light-shaft, it spread also to the sixth floor and enveloped the whole upper part of the building. It did not ascend through the passenger elevators, for two of them are intact and in use to-day, and the stairways do not show evidence of intense heat,



FIG. 6. FIFTH STORY LOOKING NORTHEAST. CONTENTS BURNED OUT EXCEPT ROLLS OF CARPET NEAR THE FRONT.

for they are all usable. The most intense fire was in the rear of the fifth and sixth floors, and the rear stairway and freight elevator shafts must have contributed to make a draught. The fire in the contents of the building burned itself out in the fourth, fifth, and sixth stories in about an hour, and when it was thought to be extinguished, it was found that the basement was on fire. The basement fire was not extinguished until 3 A. M. on the 8th of April, when it was discovered that the entire contents had been consumed. The first story was only damaged by smoke from the basement and small fires around the stairway openings and conveyer shaft. The second and third stories were not burned at all, and only damaged by water. I visited the building on the 8th of this month and found business going on in the basement, first, second, and third stories, and two passenger and one freight elevator running to the sixth floor. On the fourth floor, where everything combustible was destroyed, much of the plastering, which I was informed was done with King's Windsor cement, had fallen, the columns and girders were intact, and in two small



FIG. 7. SIXTH STORY LOOKING NORTHWEST, SHOWING PART USED AS RESTAURANT.

patches the bottoms of the 15-in. beam arches had fallen off. These were northeast and northwest of the light-well, where the fire seemed to have started. The fifth story seemed to have been exposed to the most intense heat. Here were the furniture and upholstery goods. Most of the wood flooring was completely burned away, and in some cases the 4-in. sleepers were burned out. Three of the columns on the edge of the light-well were completely stripped of their fire-proofing, and two in other places were partly stripped, the tiles in the center having fallen first. An examination of those apparently intact showed that many of them had vertical cracks. It was after an examination of the columns on this story in all conditions that I came to the conclusion that the danger to all columns fire-proofed only by building a wall around them is from the *crimping* of this covering by expansion vertically. I have referred to this before



FIG. 8. SIXTH STORY LOOKING SOUTHEAST, SHOWING KITCHEN PARTITION WHICH SAVED COOKING APPARATUS, AND CEILING FALLEN ON THE LEFT.

in *THE BRICKBUILDER*, but never before saw it so fully demonstrated. There were columns on which the tiles were crimped near the center and sometimes on one side only, and cracks always ran from the crimping to the top and bottom. As has been said above, the column protection was built firmly from girder to girder and could not expand vertically. In the sixth story, where the columns were not entirely destroyed, the covering was all intact, because the covering abutted against the yielding ceiling. On this fifth story the girders had the severest test, and came out unscathed. Here also the greatest damage to the hollow tile arches was seen. But it was different from that seen in 1897. Where the bottoms came off they dropped in fields and not in scattered patches. This seemed to show the homogeneity of the bottoms of the arches, as the expansion affected great numbers where the heat exceeded the limit of resistance. The strength of the floors was not affected by this loss, and in only one place was there a small hole from the sixth



FIG. 9. SIXTH STORY LOOKING SOUTHEAST, OVER THE PART OF ROOF THAT FELL.

story, where a beam or girder from the roof probably struck. In fact, the sixth floor safely withstood the shock of the falling roof.

The loss of the rear half of the roof and ceiling was clearly due to the failure of the ceiling, which was plastered on expanded metal. This ceiling must have had extensive openings in it to enable the play of the flames from the burning stock room to effect such complete destruction of the roof. One of the Z-bar steel columns is still standing, but is not seen in the illustrations, the top of which hangs down from the ceiling line like a wet rag. Fig. 9 shows the steel work of the roof after it fell, being taken from the top of the iron stairway which led to the roof in the rear. The roof and ceiling and all the columns that supported them are entirely destroyed, from the north end of the central light-shaft to the rear of the building. The top of the rear wall and cornice must have been loosened by the expansion of the 20-in. steel roof girders before they fell. A large ornamental terracotta belt course at the top of the fourth-story windows

on the 5th Street front seems to be badly damaged, which was not the case in 1897. The Roman bricks with which the walls are faced are intact. The suspended ceiling still stands in the front part of the sixth story, and is in good condition, except where water struck it through the windows. This part was furnished with chairs and tables, and had no goods in it. The tile partition around the kitchen saved the large range, but it was badly cracked in some places. Unequal expansion seems to have been the cause. Individual tiles were not cracked, and no part of it fell, except a few tiles over a large door.

The fire in the basement was remarkable in many respects. It was not discovered until the fire in the three upper stories had burned itself out or had been nearly extinguished. As the main light-well did not pass through the first floor, the only way in which it could get to the basement was through the conveyer shaft and the rear freight elevators. From the fact that the most severe fire was in the rear of the basement, it must be presumed that burning embers first fell down the rear elevator shafts. From the fact that the fire was also severe around the conveyer shaft, it must be presumed that it acted as a flue from the basement after the fire had descended in the rear. The firemen on the first three floors prevented it from communicating with those stories. The effect of heat on the structural tile of the first floor, which was only 9 ins. thick, was much the same as in the previous fire. These tiles had two air cells. The bottoms fell off in patches where the heat was most severe, but in no place did the fire penetrate the floor.

It will, of course, be asked, What are the lessons of this second fire test? Very little can be said beyond what has been suggested above. The only burned clay fire-proofing in the part of the sixth story that was wrecked by the fall of half the roof was the column covering and a few partitions. The former went down with the steel work. The three steel columns stripped in fifth story were not injured by fire, and the 3-in. partition tiles that surrounded them must have failed in the last stages of the fire, or been knocked off to examine the steel. The real cause of the fall of the roof has been already suggested. The defects in the system of column covering used have also been repeatedly referred to in previous issues of *THE BRICKBUILDER*. That the hollow tile everywhere protected the steel skeleton is evident. That it did not save itself everywhere is due to the fact that it was too hard. The loss where it did fail was but a small percentage of the part exposed. That the three principal floors were saved, and the contents damaged only by water, when exposed to fire both above and below, notwithstanding the existence of a great open light-shaft in the center, is evidence that the fire-proofing of the building was remarkably effective in performing its office.

After the above description the illustrations here given will be in the main self-explanatory. The half-tone pictures show the parts of the building as they looked immediately after the fire. When I saw it the floors had been cleared of rubbish, and the structural steel of the roof mostly removed, and I could form a better opinion of the action of fire than from the photographs.

“The Brickbuilder” Competition. I.

AN ENTRANCE GATEWAY AND LODGE FOR A LARGE ESTATE.

CRITICISM AND AWARD.

BY CASS GILBERT.

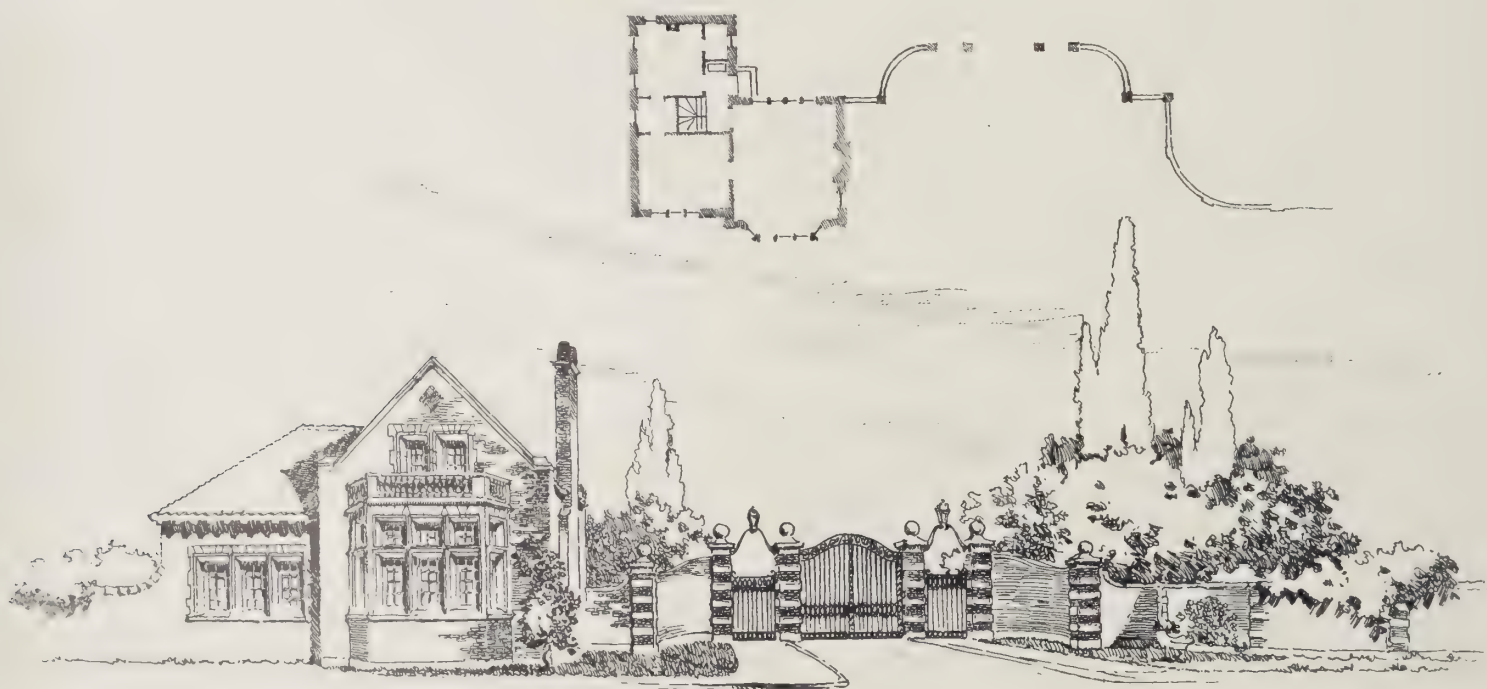
FEW of the minor problems of architectural design present more charming possibilities than that presented by THE BRICKBUILDER in “An Entrance Gateway and Lodge for a Large Estate,” and it is a matter of regret that none of the competitors have satisfactorily solved it. As a whole, the designs submitted are much below the average, in composition, style, and presentation.

The design submitted by the insignia of a *fleur-de-lis*, while not in itself particularly interesting, seems to me freer from objections and more appropriate in sentiment

modest lodge that quite lacks expression, and which would not command a good view from any one room. In a certain sense its modesty is acceptable, but something more than this is necessary to make it an attractive gate lodge.

The design submitted by “1900” is the “cleverest” of the lot, but cleverness is not good art. The plan of the lodge and its connection with the gateway is good, in that respect the best submitted,—but the lodge, set back from the highway as it is, does not command a sufficient view of the approach. Taken separately, the detail is interesting, but the design is pretentious as a whole; the proportions are not well studied; both the gable over the gateway and the cupola at the apex of the roof are out of scale with the lodge itself. But notwithstanding its faults, this design is interesting, and its suggestion of the treatment of brickwork and color is especially so.

The design submitted by “Manor” is well treated in



FIRST PRIZE DESIGN.

MR. EDWARD PERRY DANA, BOSTON, MASS.

THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.

for the gate lodge for a gentleman's estate than any of the others. The plan is reasonable; the principal room commands the approaches; the style is modest and well suited to the purpose; but there is a lack of scale between the bay window and the lodge, and between the bay window and the gateway. This design is distinctly not “clever.” It has, however, a domestic quality, and a certain modesty and simplicity which commends it. I fancy that a gentleman would not be ashamed to acknowledge that this was the gateway to his estate, though he would not be especially proud of it.

The design submitted by “Eagle” presents a rather well-proportioned gateway, which is connected with a

respect to the gateway alone, particularly as to the two side entrances; but the location of the lodge, and its relation to the wall, makes it the mere appendix of the wall rather than a controlling factor in the composition.

The design submitted by “François” presents an intelligent conception of the location and function of a lodge. He has, however, given too much prominence to the treatment of his iron fence. It would have been better to extend the wall which is to the left of the lodge into the center of the composition and recognize it between the lodge and the gate.

In the design submitted by “George,” I find a quaint

conception of the problem. It would look better executed than as drawn. It is, however, too naive to be seriously considered. At the same time, I think, if executed, its modesty and simplicity would commend it.

I find it difficult to make a choice for first place (not that it is an embarrassment of riches), but, on the whole, would place first the design marked with the *fleur-de-lis*; second, the design submitted by "1900"; third, the design submitted by "Eagle." For the competition the following program was announced:—

PROGRAM.

It is assumed that a gateway is to be built at the entrance to the grounds of a large private estate. A

to afford space for a desk and key rack. In the upper story there are to be two small chambers, with bath room, etc. The lodge may form, if desired, a part of the enclosing wall of the estate. The gateways are to be closed with iron grilles. The ground is supposed to be level. All of the construction is to be such as is adapted to materials in burnt clay.

REQUIRED: A perspective sketch taken from the side of the highway diagonally opposite the lodge, also a sketch plan of first floor only at scale of 1-16 of an inch to the foot, both drawings being in black ink with no wash work, upon a sheet measuring 15½ ins. wide by 10 ins. high. Each drawing is to be signed by a *nom de*



SECOND PRIZE DESIGN.

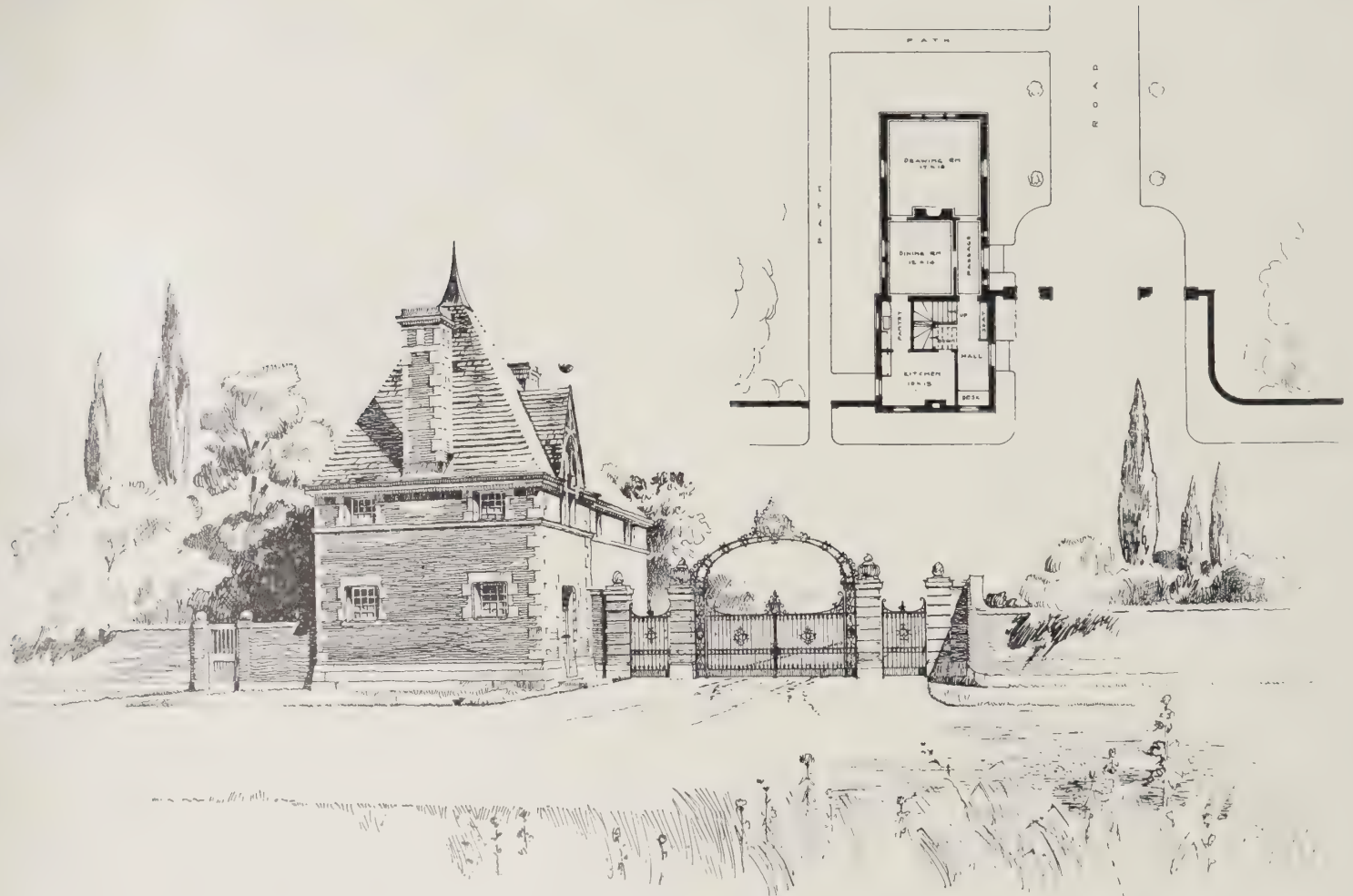
MR. JAMES C. GREEN, NEW YORK CITY.

THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.

wall separates the grounds from the highway, extending in a northerly direction; the entrance is recessed from the line of the street, either in a rectangle or semicircle as preferred, and provision is to be made for a driving gate in the center, 9 ft. wide in the clear, and a foot passage each side, 4 ft. wide, though these dimensions need not be followed exactly in the design. On the left of the gateway, looking from the road, there is to be a gardener's lodge, containing a small living room, so placed that the main highway and the road inside the grounds can be visible from its windows, this room being about 16 by 18 ft. There is to be also a kitchen, 10 by 11 ft., a dining room, 11 by 14 ft., and a small entrance hall large enough

plume or device, and accompanying the same is to be a sealed envelope with the *nom de plume* on the exterior, and containing the true name and address of the contestant.

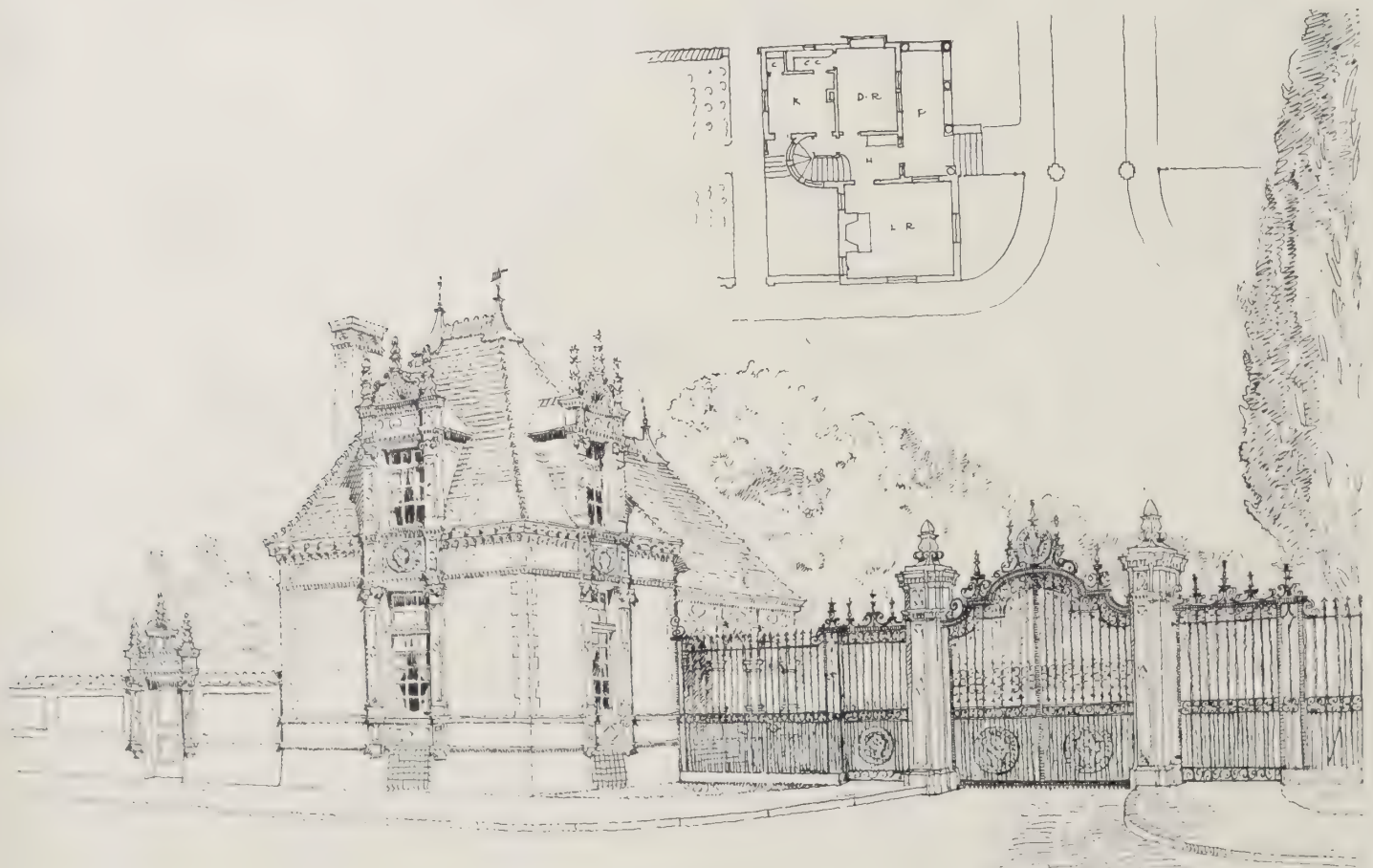
The drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before March 15, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Mr. Cass Gilbert has kindly consented to judge and criticize this competition.



THIRD PRIZE DESIGN.

MR. C. A. MITCHELL, MONTREAL, CANADA.

THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.



MENTION.

MR. EDWARD F. MAHER, BOSTON, MASS.

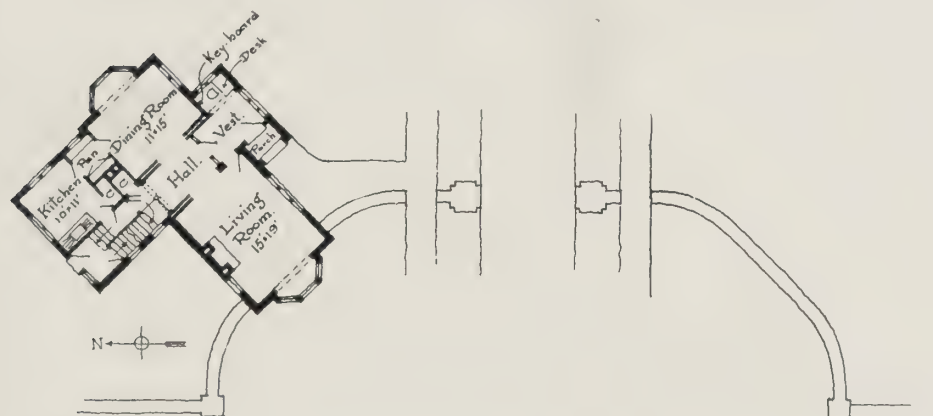
THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.



MENTION.

MR. GEORGE P. KIEFER, MILWAUKEE, WIS.

THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.



MENTION.

MR. RICHARD PHILIPP, MILWAUKEE, WIS.

THE BRICKBUILDER COMPETITION. I. AN ENTRANCE GATEWAY AND LODGE.

Selected Miscellany.

NOTES FROM NEW YORK.

Satisfaction continues to be expressed with the condition and outlook for general business, with considerable difference of opinion regarding the maintenance of the present high range of prices. Iron manufacturers particularly are very loud in their protestations that quotations will be maintained, but in spite of that the feeling prevails that the remarkable boom of last year cannot last and prices must drop.

The most notable single parcel of real estate ever disposed of at auction in this city was that containing the Fifth Avenue Hotel and the Madison Square Theater, sold for the executors of the estate of Amos R. Eno on Thursday, April 26, for \$4,225,000.

Work on the plans for the new Public Library of New York is being rapidly pushed by the architects Carrere & Hastings, and the foundation for the building will soon be put in. Governor Roosevelt has just signed a bill removing the limit of appropriation to be made by the city



PILASTER, CAPITAL, ARCH, AND SPANDREL, RESIDENCE AT
NEWPORT, R. I.

Perth Amboy Terra-Cotta Company, makers.
McKim, Mead & White, Architects.

for the building of the library, which makes the way clear for rapid progress.

On the 30th of April, Mr. Thomas Hastings, of Carrere & Hastings, was married at Greenwich, Conn., to Miss Helen Ripley Benedict, daughter of Com. E. C. Benedict. Mr. Charles F. McKim was best man, and among the ushers were Stanford White, Charles Dana Gibson, and R. H. Russell. Mr. Hastings is beloved by all who are so fortunate as to be associated with him, and by means of his undoubted talent and ability is known and admired by all his professional brethren.

It begins to look as though we might hope to see steps taken for the preservation of the beautiful Palisades before they are completely ruined and obliterated by the vandals who for years have been quarrying there, and who have blasted away tons of magnificent rock which had been landmarks on the Hudson for years. After many futile attempts at legislation the governors of New York and New Jersey have appointed commissioners, who will



TERRA-COTTA PANEL.

New York Architectural Terra-Cotta Company, makers.

soon confer as to methods for the preservation and beautification of these magnificent cliffs.

The following are a few of the important items of new work: McKim, Mead & White have prepared plans for a brick and stone fire-proof residence, to be built for Mr. Joseph Pulitzer at No. 7 East 73d Street; cost, \$100,000. R. C. Gildersleeve has planned a nine-story brick and stone apartment building, to be erected on West 45th Street; cost, \$150,000. Howells & Stokes have planned a five-story stone and brick club house for the American Geographical Society, to be erected on 81st Street, near Fifth Avenue. Clinton & Russell have prepared plans for a six-story brick and stone department store, to be built in Newark, N. J., for Hahne & Co.; cost, \$1,000,000.

NOTES FROM CHICAGO.

Chicago building operations for March are the worst for any month in twelve years, and show how completely building operations have been paralyzed by labor troubles. Permits were issued for only three buildings exceeding three stories in height, and only sixty-six permits were granted for two-story buildings.

Mr. Harvey L. Page, of Harvey L. Page & Co., architects, Chicago, has located at San Antonio, Tex., having associated himself with the James Riely Gordon Company. Mr. E. Stanford Hall, of Harvey L. Page & Co., will continue the practice of the old firm at 918 Association Building, Chicago.

At the regular monthly meeting of the Illinois Board of Examiners of Architects, held on April 13, Mr. H.



TYMPANUM IN ENTRANCE TO APARTMENT BUILDING,
CHICAGO.

Northwestern Terra-Cotta Company, makers.
Sidney Lovell, Architect.



PEDIMENT OVER WINDOW ON CURVED BAY, OFFICE BUILDING, HARTFORD, CONN.

Excelsior Terra-Cotta Company, makers.
William C. Brocklesby, Architect.

William Kirchner of St. Louis and Mr. R. Clipston Sturgis of Boston were examined by exhibits and granted certificates entitling them to a license.

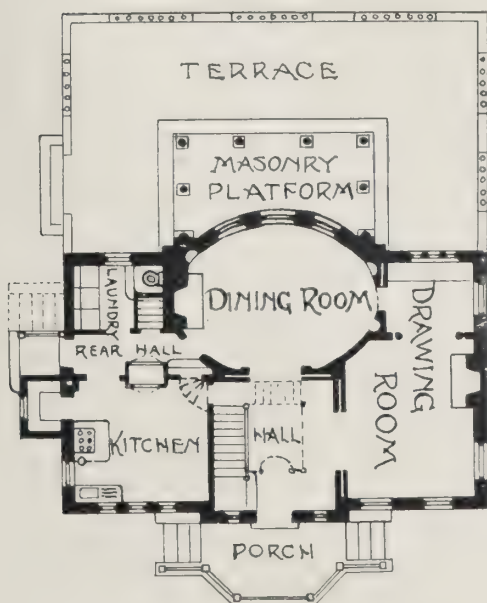
There could be no higher proofs of the deep esteem in which the late Dankmar Adler was held by his fellow-architects than the following resolutions, adopted by the Illinois Chapter of the American Institute of Architects at their last meeting:—

"Wishing to record its sense of loss in the death of Dankmar Adler, one of its members, hereby expresses its profound grief that one of the noblest among men in our chosen profession should so suddenly be removed by an all-wise yet inscrutable Providence.

"Possessing a character making for all that is earnest,

honest, and fearless; of a mind richly endowed and beneficially used; of a personality cordial, generous, and kindly, he stood through the years, not only an index of those ideals that we cherish, but notably as one living close to them in all sincerity.

"Broad in his sympathies and without bias, yet his interests seemed



HOUSE AT WYOMING, N. J.
(Illustrated from photo in plate form.)
J. W. Dow, Architect.

especially to have been centered in the welfare of his professional brethren of the West, and it is to his matured and reliable judgment, his forceful and convincing advocacy, that the profession in the Mississippi Valley is largely indebted for the recognition of its high standing.

"His departure at the comparatively early age of fifty-five, when it would seem, in the natural course of events, that many years of usefulness remained before him, cannot fail to impress us with a peculiar sense of shock. Our profession has been much ennobled through his acts of devotion, and in proportional keenness must his loss be felt. As a man, an architect, and an exemplary citizen, his memory will remain long cherished by his colleagues.

"The secretary is instructed to record in the books of the Chapter the sentiments above expressed, as the unanimous and heartfelt sense of the meeting, and to forward a copy thereof to the bereaved family, in token of its respectful sympathy and condolence.

"(Signed)

"SAMUEL A. TREAT, *President*.

"GEORGE BEAUMONT, *Secretary*."

IN GENERAL.

It is announced that the Cincinnati Chapter of the American Institute of Architects has officially joined the Architectural League of America, and will send one or more delegates to the convention to be held in Chicago in June.

On April 12 a farewell dinner of thirty-five covers was given in the rooms of the T Square Club, in honor of Mr. James P. Jamieson, upon his departure from Philadelphia to assume the position of superintendent of the



FIGURE OVER ENTRANCE, MEDICO-CHIRURGICAL HOSPITAL, PHILADELPHIA.

Conkling-Armstrong Terra-Cotta Company, makers.
Herman Miller, Architect.



BROWN BUILDING, ST. LOUIS, MO.

Built of impervious white-coated brick, manufactured by the Hydraulic-Press Brick Company.

H. E. Roach & Son, Architects.

new University Buildings, designed by Cope & Stewardson, to be erected in St. Louis, Mo.

On Wednesday evening, April 18, an unusually large attendance gathered to decide the final competition in the T Square Club series for the season. Mr. Lloyd Titus won first mention for the year's work, and thereby receives the Traveling Scholarship Fund. Mr. Richard Watmough was second, and Andrew Sauer third. The meeting recommended among other things that its delegates to the Chicago Convention, of the Architectural League of America should use all their efforts to secure the third annual convention for Philadelphia.

It is a satisfaction to announce the appointment by the president of the Architectural League of America of Mr. Cass Gilbert of New York and St. Paul to the chairmanship of the National Committee on Civic Improvements. As every one knows, Mr. Gilbert is a very able and successful architect, and by special studies is well qualified to develop to great efficiency this department of work which this new organization has undertaken.

The Architectural League of New York has already accomplished much in this field for

the city of New York, and their success has been the inspiration which has brought about this committee. The field is so new and so comparatively untouched that it seems desirable to outline in a few words what the purpose is, and how intimately the work may be associated with the municipal life of our cities.

The results aimed at by this committee are to be obtained by their giving advice to municipalities or corporations without charge or fee, traveling expenses, of course, excepted. The committee is made up of the following representative men: Cass Gilbert, chairman, New York and St. Paul; H. K. Bush-Brown, New York; Paul A. Davis, 3d, Philadelphia; Dwight Heald Perkins, Chicago; Edwin Henri Oliver, New Orleans; George Carey, Buffalo; Noel Wyatt, Baltimore; Charles M. Robinson, Rochester; Frederick William Striebing, Cleveland.

The second annual convention of the Architectural League of America will be held at the Art Institute in Chicago, June 7, 8, and 9, 1900, under the auspices of the Chicago Architectural Club.

The Architectural League is composed of the princi-



WINDOW COLUMN,
APARTMENT,
NEW YORK CITY.
New Jersey Terra-
Cotta Company,
makers.
M. Bernstein, Archi-
tect.



BALDWIN HOSPITAL, COLUMBUS, OHIO.

Built of light gold mottled "Ironclay" brick, furnished by the Columbus Face Brick Company.

Richards, McCarty & Bulford, Architects.



ALBION BUILDING, MINNEAPOLIS, MINN.

Terra-cotta furnished by the American Terra-Cotta and Ceramic Company. Brick furnished by the Columbus Brick and Terra-Cotta Company.

E. Kennedy, Architect.

pal architectural clubs of the United States and Canada, and its object is the promotion of American architecture and the allied fine arts. Pertinent questions and subjects of interest to architectural clubs and societies engaged in the promotion of municipal art will be discussed, and a cordial invitation is extended to all such societies to correspond with the secretary, H. W. Tomlinson, with the object in view of being represented at the convention.

The Washington Architectural Club, seeing in the movement promulgated by Mr. Franklin W. Smith, to erect a group of buildings illustrating the history and development of architecture, a means for furthering the object for which the society was established, has adopted the following resolutions:—

“That we extend to Mr. Smith an expression of our good will by indorsing the movement initiated by him, and declaring our belief in the immense amount of good such a scheme will ultimately accomplish by popularizing the study of architecture, and by object lessons, creating a just appreciation of it.

“That we believe the expenditure of money required is proportionate to the benefits to be derived, and that we urge Congress to take some definite action on the subject.”

The first annual exhibition of the Detroit

Architectural Club, held at the Museum of Art, April 29 to May 12, met in the fullest degree the expectations of the committee having the affair in charge. The catalogue, which did not depart much from the usual type, was interesting; especially interesting, no doubt, to those who had the management of finances in hand.

HAND RAILING SIMPLIFIED.— Edited by Fred. T. Hodgson. Wm. T. Comstock, Publisher, 23 Warren Street, New York, N. Y. Cloth, \$1.00.

This is the only book published which treats the art of Hand Railing throughout on the sectorian system, and the work seems to be done thoroughly.

By this method any good workman who gives an hour or two to the study of the subject, as exemplified in this little work, will be enabled to build a fair rail; and it will give him such an insight into the science of Hand Railing that he will have but little trouble in understanding any of the more scientific systems, such as are formulated by Riddell, Monckton, Secor, De Graff, or Nicholson.

The terms used are in plain English, and the explanations are couched in the simplest language possible. Taking it all in all, the little work will prove very useful as a sort of primer, or first book in Hand Railing, and is sure to become popular with young workmen.

SYSTEM OF MEASUREMENTS adopted by the National Association of Master House Painters and Decorators of the United States. The Painters Magazine, 100 Williams Street, New York. 9 by 12 ins. 60 pp.; price, \$1.00.

Painters are not the only ones who should be interested in this book. Architects and builders as well are frequently called upon to make estimates on the cost of



PENNSYLVANIA INSTITUTE FOR THE BLIND, OVERBROOK, PA.

Roofed with a full brown glazed interlocking Spanish tile, made by the Ludowici Roofing Tile Company.

Cope & Stewardson, Architects.



HOUSE AT WASHINGTON HEIGHTS, WASHINGTON, D. C.
L. Norris, Architect.

a house, and the book, though concise, is a complete and practical work on painting estimates.

The work consists of a very comprehensive system of rules for reducing all the various surfaces, moldings, balustrades, and the like to an equivalent number of square yards of plain surface, that will represent an equal cost to the painter of the same quantity of work required to be done. It is therefore necessary only to measure the work in accordance with these rules, and apply the local price per square yard of plain surface, which is governed by cost of material and labor, to be able to correctly estimate the most complicated job of painting. In addition to the rules, there is an excellent glossary of architectural terms.

SUNDRIES.

Mark H. Whitmeyer, architect, has opened an office at 15 North Vermilion Street, Danville, Ill., and would be glad to receive manufacturers' catalogues and samples.

Beaumont, Jarvis & Co., architects, of Toronto, have opened a branch office at 39 Sparks Street, Ottawa, Ontario, Canada, where they desire manufacturers' catalogues and samples.

Rolland Adelsperger has been appointed supervising architect of the Department of Charities and Hospitals at Havana, Cuba. Catalogues and samples of American manufacturers are solicited.

Carl E. Nystrom, architect, has opened an office at Laurium, Mich., and would be glad to receive manufacturers' catalogues and samples.

William Homes, Boston, who recently retired from

the firm of Fiske, Homes & Co., to establish a general building material business, has disposed of his new business to Fiske & Co., successors to his old concern.

Waldo Bros., Boston, have closed several contracts for the Perth Amboy Terra-Cotta Company, among them being Park Brewery, at Providence, R. I.; academy at Milton, Mass., Winslow, Wetherell & Bigelow, architects; residence at Beverly, Mass., Little & Brown, architects.

The Hartford Faience Company, Hartford, Conn., are putting on the market several new terra-vitræ tile in dull finish and rough exterior. Samples sent on application.

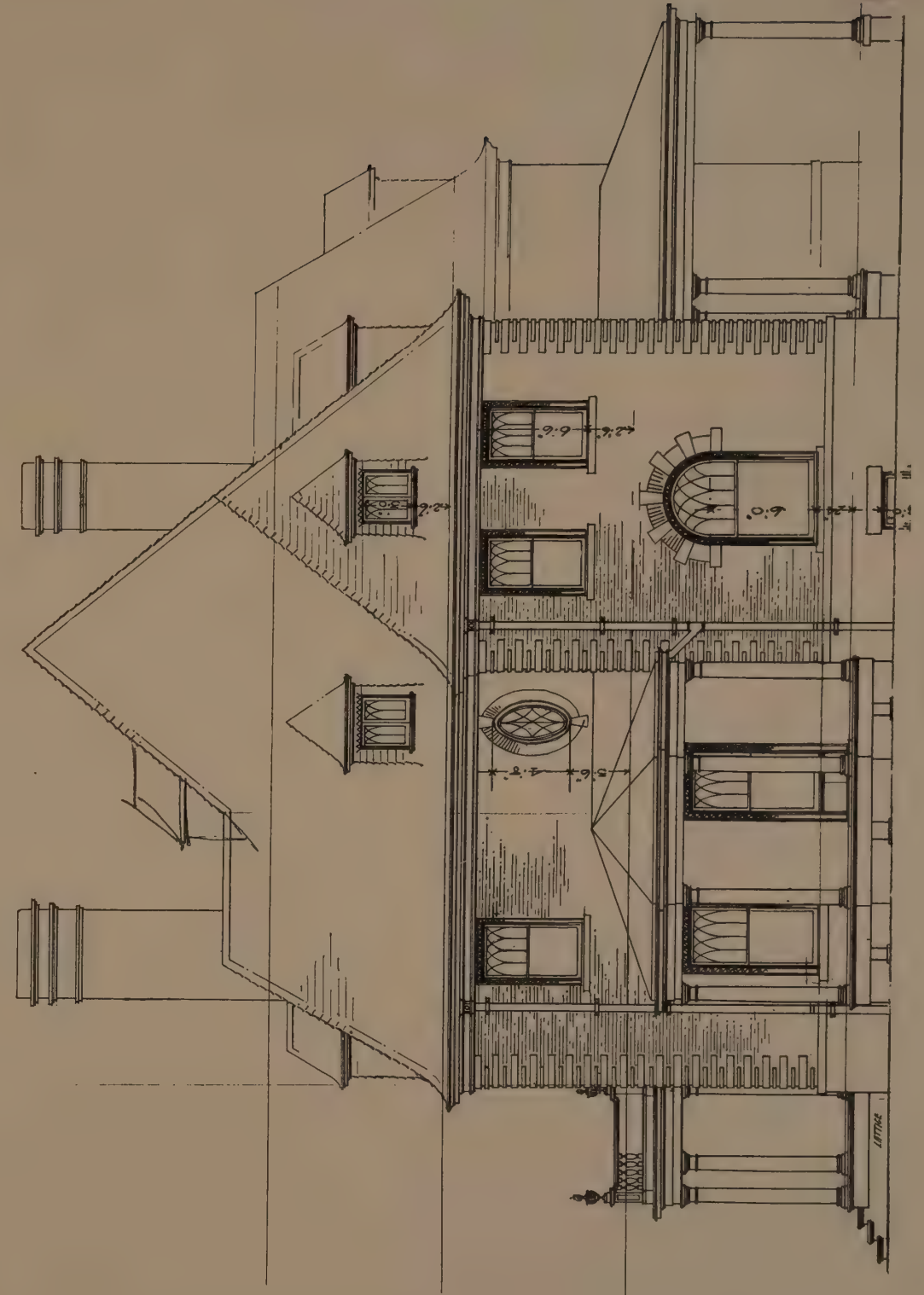
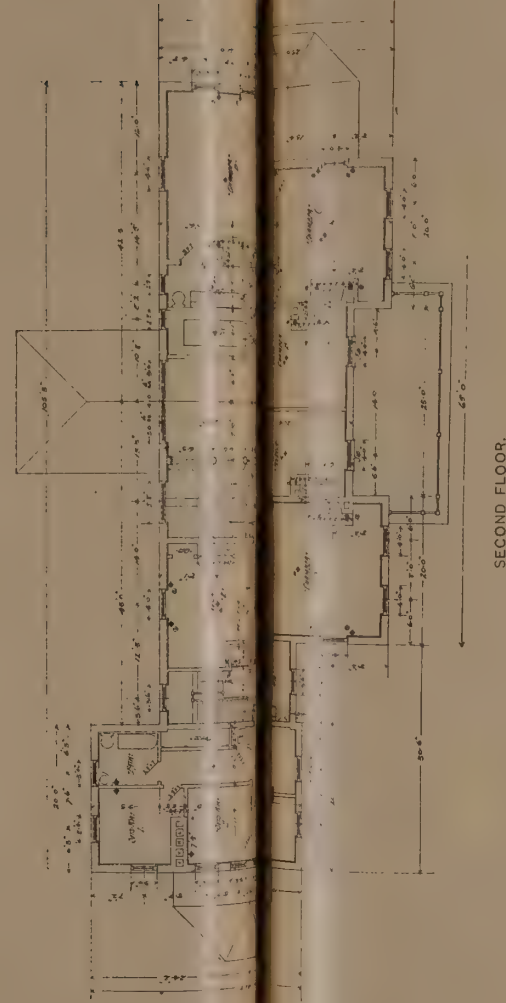
In connection with the illustration of the Liggett & Myers Company's office building made in THE BRICKBUILDER for April, it should have been stated that glass tiles made by the Ludowici Roofing Tile Company were used in the roof in place of the ordinary skylight. The design of this glass tile is such that it acts prismatically on light, transmitting several times more light than the same area of plain glass. The avoidance of skylight frames accomplished by the use of glass tiles, thus maintaining the roof lines unbroken, is aesthetically a distinct advantage.



DROPS UNDER
BRACKET, LENOX
HOTEL, BOSTON.
Atlantic Terra-Cotta
Company, makers.
A. H. Bowditch,
Architect.



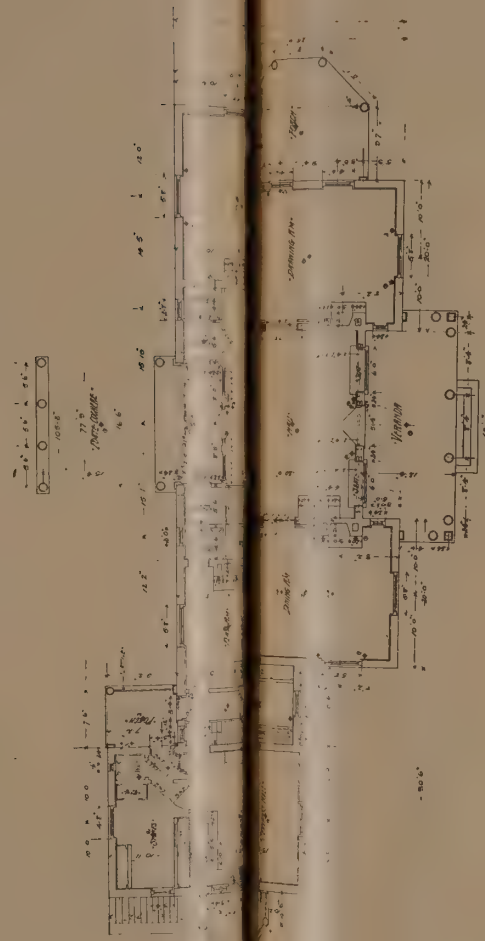
HOUSE AT TROY, N. Y.
H. Langford Warren, Architect.



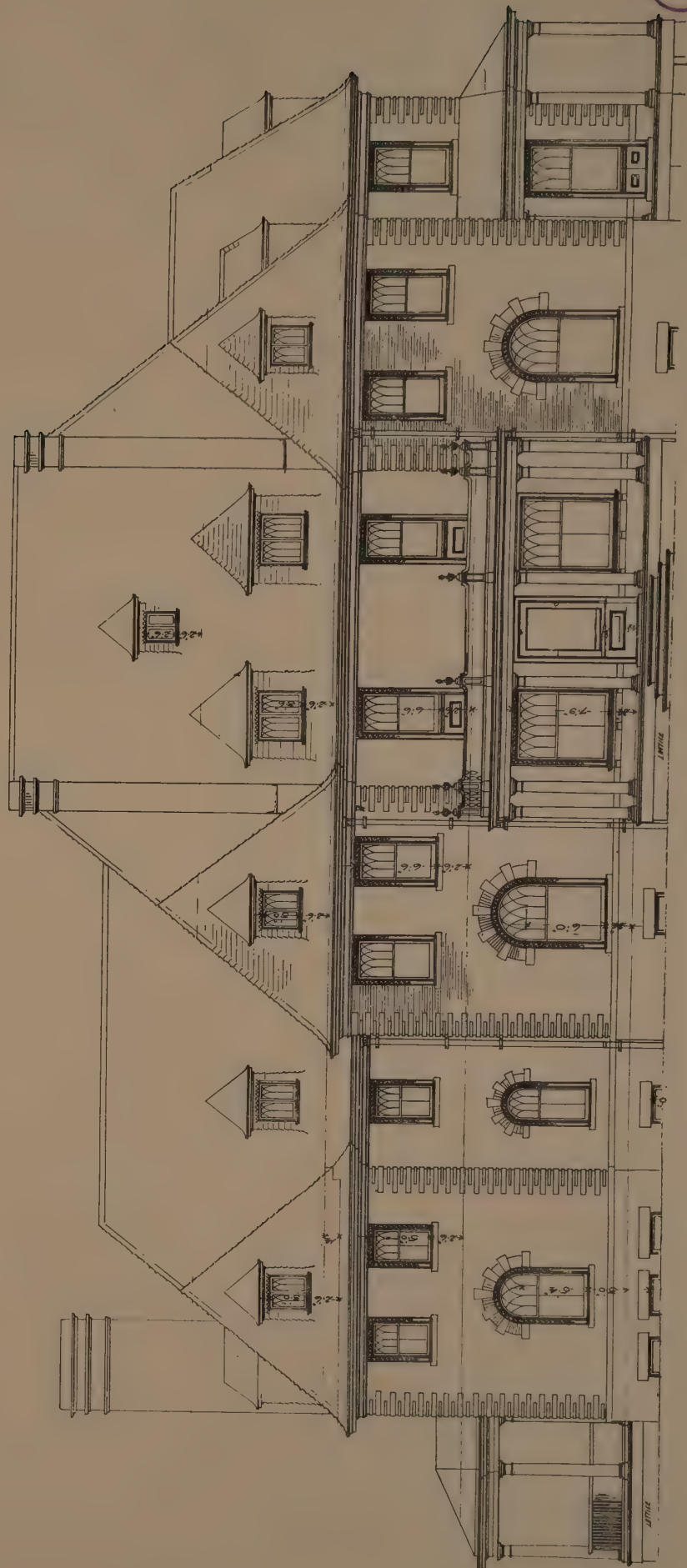
HOUSE, AT TUXEDO PARK, NEW YORK CITY.
BRUCE PRICE, ARCHITECT.



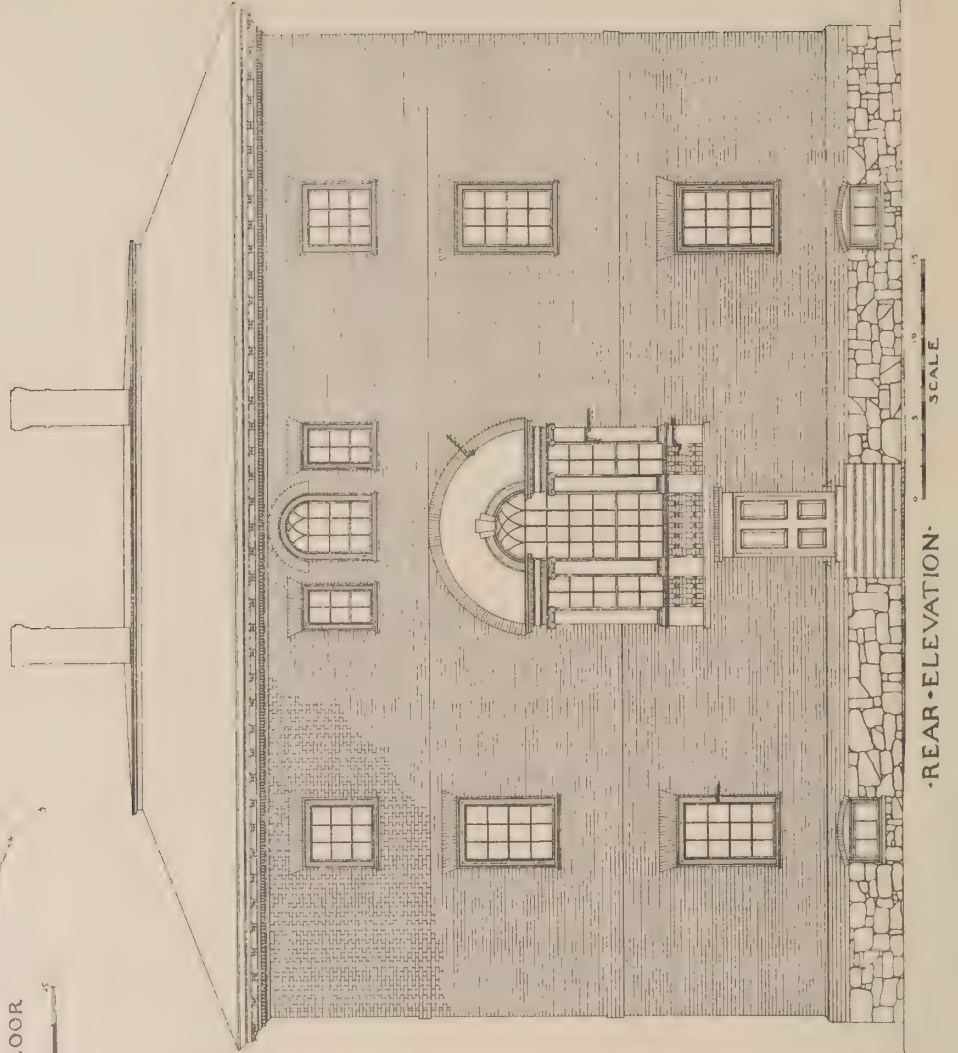
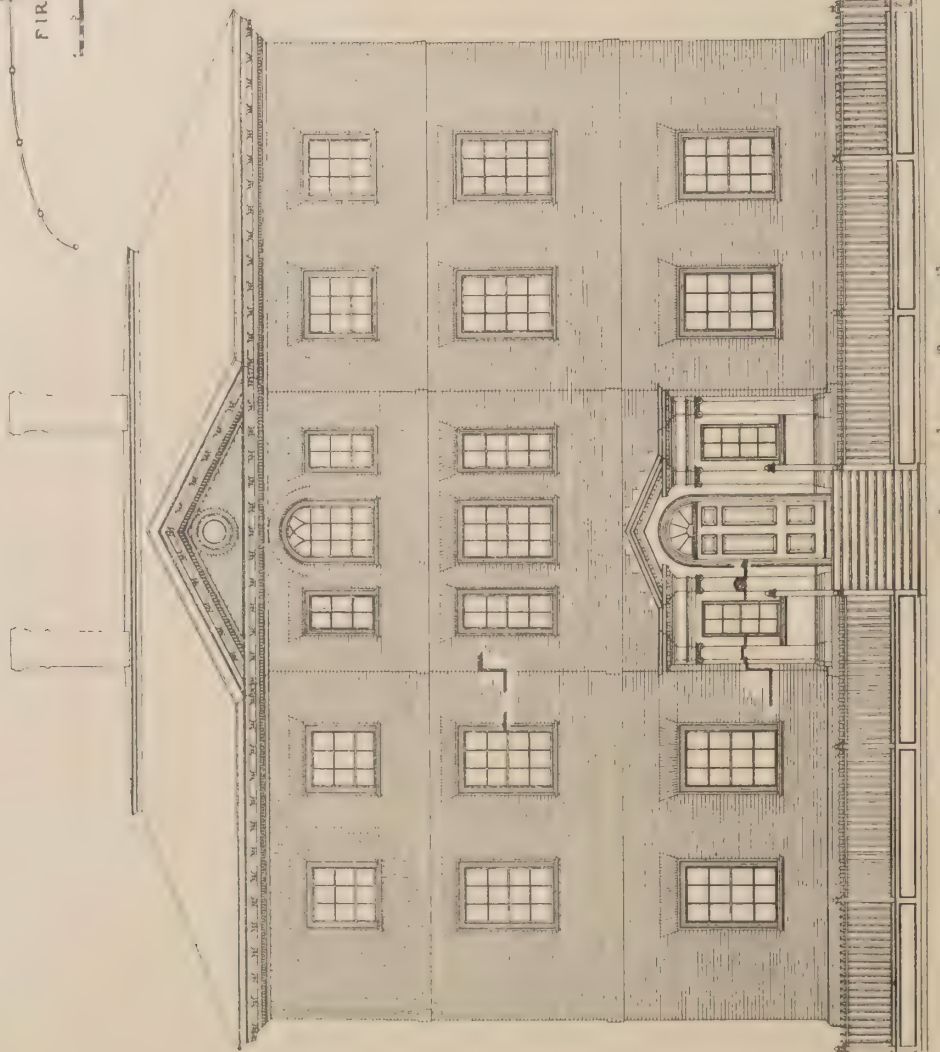
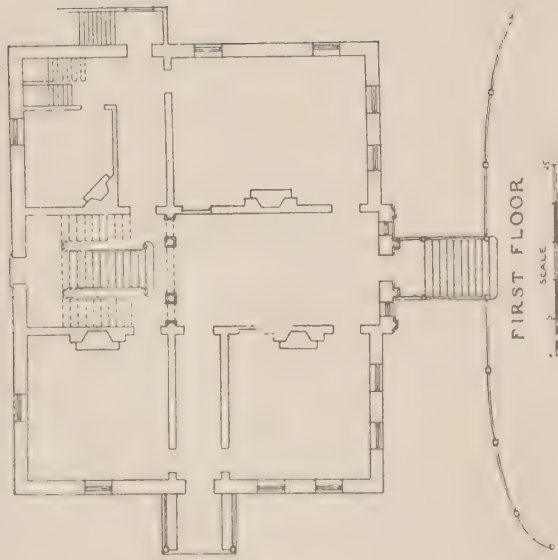
REAR ELEVATION.



FIRST FLOOR.



FRONT ELEVATION.
HOUSE AT TUXEDO PARK, NEW YORK.
BRUCE PRICE, ARCHITECT.

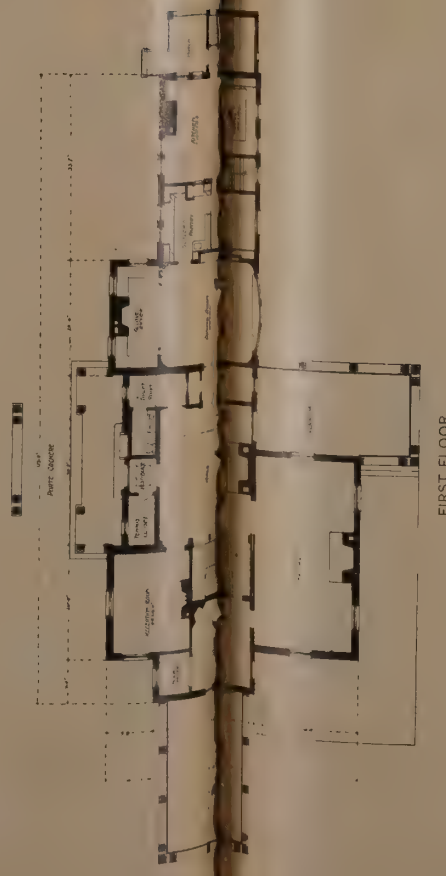


CHASE HOUSE, ANNAPOLIS, MARYLAND. BUILT 1770.

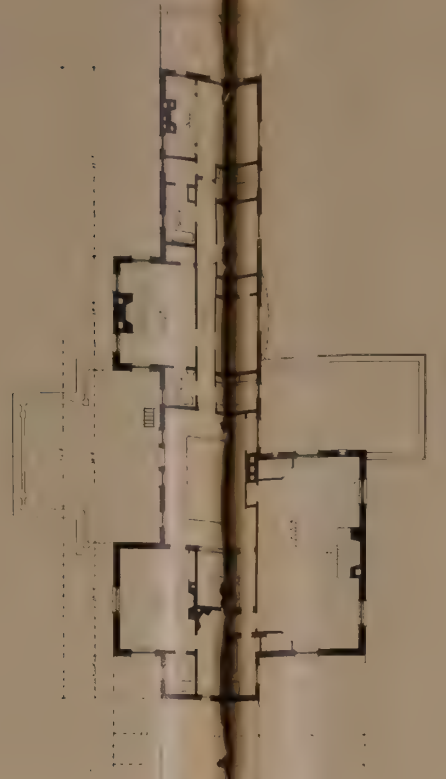
C. H. ALDEN, JR., DEL.



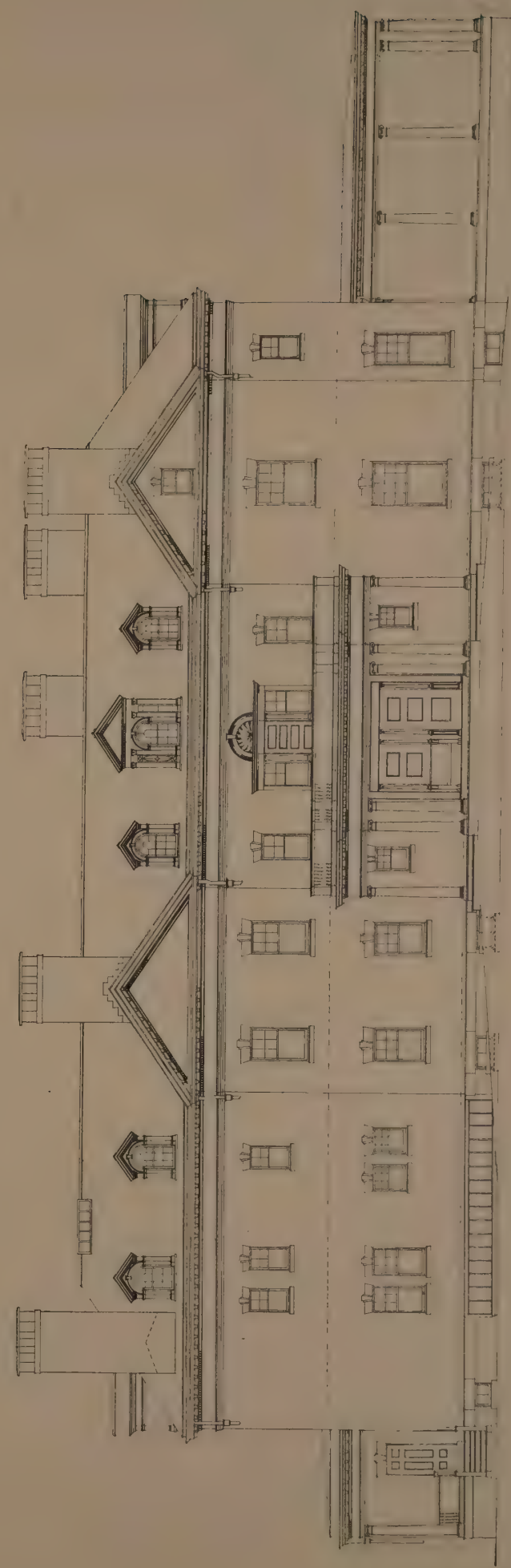
REAR ELEVATION.



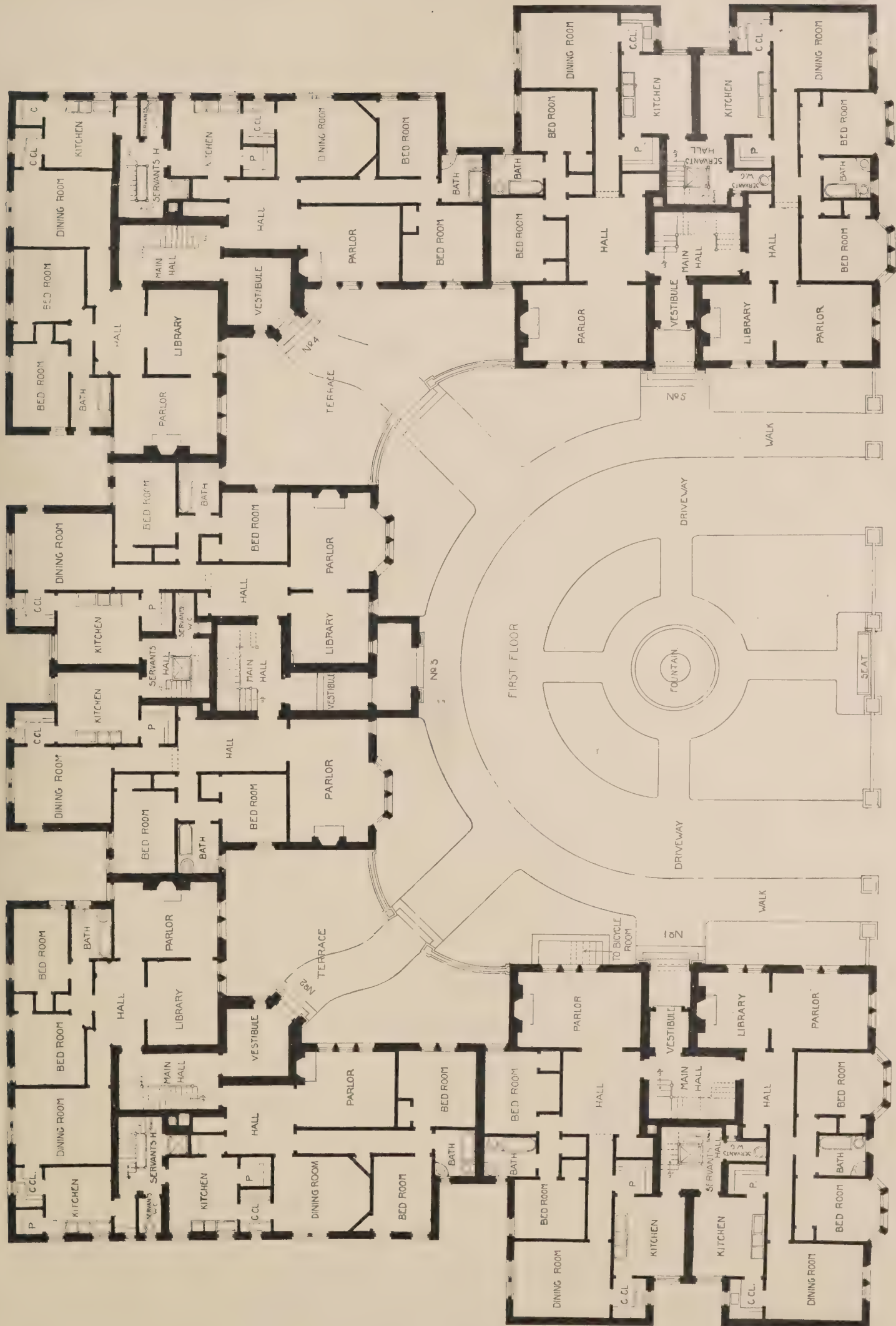
FIRST FLOOR.



SECOND FLOOR.



FRONT ELEVATION
HOUSE AT LAKE FOREST, ILLINOIS.
HOLABIRD & ROCHE, ARCHITECTS.



PLAN, RICHMOND COURT, BEACON ST., BOSTON.
GRAM, GOODHUE & FERGUSON, ARCHITECTS.



HOUSE AT LAKE FOREST, ILLINOIS.
HOLABIRD & ROCHE, ARCHITECTS.

THE BRICKBUILDER,
MAY,
1900.



HOUSE AT LAKE FOREST, ILLINOIS.
HOLABIRD & ROCHE, ARCHITECTS.



HOUSE AT TUXEDO PARK, N. Y.
BRUCE PRICE, ARCHITECT.





HOUSE AT WYOMING, N. J.
J. W. DOW, ARCHITECT.



RICHMOND COURT, BEACON STREET, BOSTON, MASS.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.



RICHMOND COURT, BEACON STREET, BOSTON, MASS.
 CRAM, GOODHUE & FERGUSON, ARCHITECTS.



THE BRICKBUILDER,

JUNE,

1900.



ENTRANCE GATES, "GEORGIAN COURT," LAKEWOOD, N. J.
Bruce Price, Architect.



THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

	PAGE		PAGE
Agencies.—Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

THE CONVENTION OF THE ARCHITECTURAL LEAGUE OF AMERICA.

WE present with this issue of THE BRICKBUILDER a very complete report of the proceedings of the Architectural League of America, which held its annual convention in Chicago during the past month. We also have given up a very large portion of our space to the presentation of several of the papers which were read at this convention, believing that they are of sufficient value to the profession to warrant all the space we have given them, and believing also that they will be of very general interest to our readers.

The keynote of this convention was the enthusiasm of the delegates. The papers present different points of view of the subjects under discussion, and without undertaking to express our editorial opinion as to the points of view or the lines of discussion, we feel quite convinced that the degree of enthusiasm which these papers and this convention represent is sure to result in some decided growth in the profession of architecture. The exact direction this growth will take remains to be seen, but no one who attended the convention could for a moment question the earnestness of purpose, nor the clearness of intent on the part of the architects who made this meeting so decided a success. There can be nothing like stagnation where such virile sentiments abound, and the whole country can certainly unite on the broad principles which the Architectural League represents, of

fostering the best and most perfect growth of architecture in America, and for the American people. We may differ as to ways and means, but the aim of both East and West is the same, and we are glad to recognize and to welcome the boundless hope and irrepressible desire for progress which the Architectural League thus far has made so prominently manifest.

THE last decade has witnessed the realization of several opportunities which have exerted an enormous influence upon architecture in this country. The exposition buildings at Chicago, Buffalo, and Omaha, the Court of Honor at Philadelphia, and the Dewey Arch at New York have been examples of constructions which have been so purely ephemeral in their nature that they afforded architects opportunities for experiments such as would hardly have been dared in buildings of a more permanent character. We all have ideals. Few of us quite dare to put them in execution in solid materials, but these creations in plaster allow a vast latitude, and have undoubtedly been the means of imparting an enormous impulse to pure design in architecture throughout this country. On the whole, the structures to which we refer have been eminently successful. The architects to whom they have been entrusted have taken the bit between the teeth, and have made most glorious spurts, realizing in a perishable material the dreams of the magnificence of the ancient art capitals. We have no classicism to fall back upon in this country, and in default thereof the architectural lessons of these temporary structures have presented themselves before us in such manner that we cannot fail to profit thereby; and the opportunities to let the imagination play, to develop the capacity for design, without having to pay the tremendous bills, is something quite unique in the history of the world, and will undoubtedly result in a degree of magnificence in our permanent structures, which would have been impossible without these, so to speak, preliminary attempts. It may be said that among the best of our architects there is no lack of ability to design and carry out any architectural program, but our failing lies rather in the courage of our convictions. We are too apt to be restricted by considerations of cost, to forget that we are building, perhaps, for all time rather than to please our clients, and to consider questions of utility before pure art, with the result that our buildings do not always represent our highest capacities. It has been very truly said that the first requisite for success in art is the ability to see the defects in our productions; second, the consciousness that we can make them right, and third, a determination that they shall be made right. Courage of one's convictions is, after all, a very large element in architectural success.

SECOND ANNUAL CONVENTION OF THE
ARCHITECTURAL LEAGUE OF AMERICA,
HELD AT CHICAGO, JUNE 7-9.

THE Second Annual Convention of the Architectural League of America came to a close after the banquet, held at the Auditorium Hotel, Saturday evening, June 9. It is with the memory of this inspiring farewell fresh in your correspondent's mind that the following is written.

He went to Chicago anticipating little more than a commonplace reunion of draughtsmen and embryo architects, at which there would doubtless be considerable riotous enthusiasm, due principally to youthful unrestraint and mutual admiration.

He had not expected the profound and stirring addresses that were made, nor could any have looked forward to the results that actually took place. As the two hundred delegates rose from the banquet and clustered together for a few last words before separating, the scene was really solemn; every one was wrought up to a high point of tension, and while all looked pleased and satisfied, there was no demonstration, no hilarity, no shouting and singing such as often occurs at the close of an entertaining banquet.

Instead, old and young went about, quietly grasping friends and new acquaintances by the hand, with the general fervor that only takes possession of men when they have been truly and deeply moved.

The convention was called to order at 10 A. M., on Thursday, June 7, President Kelsey in the chair, and the meeting was opened by an address of welcome by J. C. Llewellyn, president of the Chicago Architectural Club, in which he expressed the conviction that the newly formed League was of real service to the profession.

President Kelsey, of the League, in responding, said, among other things:—

"One year ago, thirteen diverse architectural societies sent delegates to Cleveland for the purpose of holding a general conference, but with little thought of permanent organization; to-day, the Second Annual Convention of the Architectural League of America opens with over one hundred more registered members than were in attendance at the first reunion.

"The time has been short, and the distance separating us has been too great to enable your executive committee, in whose care the affairs of the society were entrusted pending permanent organization, to do much more than hold the ground gained at Cleveland, and keep alive the spirit of that new intimacy which brought us so suddenly together; nor has it been able to accomplish all that has been planned; but, nevertheless, it has succeeded in having the newly formed League recognized by some of the leading architectural bodies on both sides of the Atlantic.

"A communication recently received from London invites our members to attend a Congress of Architects, to be held in that city, under the auspices of the Royal Institute of British Architects, during the present month. A letter from the president of 'La Société Académique d'Architecture de Lyon,' France, has requested information in regard to the practice of architecture in the United States, from the officers of this society, to be used

at the Fifth International Congress of Architects, at Paris, which has been forwarded.

"Further recognition has been accorded us by that department of the French government having 'International Congresses' in charge, and your president has been appointed one of the four architects to represent the United States upon the Committee of Patronage. Last, but not least, the president of the American Institute of Architects has requested that a special committee from the Architectural League of America be appointed to confer with a committee from that body upon "The Code Governing Competitions in Design," and other matters of mutual interest.

"In view of these friendly greetings, it is most important that we recognize the dignity of our position and the new responsibilities they involve, and as a matter of courtesy, let alone as a matter of incalculable advantage to the League, we should respond heartily to these overtures, and I would suggest that if any of our members happen to visit London or Paris during either of the conventions, that he or they be instructed to attend and officially represent the League.

"At present this is a referendum of diverse architectural societies. Each organization is free and independent, and, if expedient, once a year they send their delegates to a general conference. These conferences may consider all matters of mutual interest, and may alter the policy of the League from year to year to conform with contemporaneous needs; we form no entangling alliances, and we commit ourselves to no principles alien to the production of rational architecture.

"But as it is easy to foresee that from different causes and from different quarters much pains will be taken to establish a firmer footing for the League than it at present enjoys, I would strongly recommend you not to make it a binding federation for the following reason:—

"*First*, because even the least restraint and the smallest obligation uniformly imposed upon a number of diverse architectural societies is apt to lead to discord; and, *secondly*, because it would at once narrow down our possible sphere of influence.

"As a referendum, a society may change its individual policy and still retain its affiliation with the Architectural League of America. A Chapter of the American Institute of Architects may send its delegates to our conventions without altering its allegiance to that distinguished body; and thus our annual convention will continue to be thoroughly representative, and a broader sense of professional fellowship and responsibility must result.

"It is important, likewise, that every delegate should feel that, in attending the annual convention of the Architectural League of America, he appears before a court of appeal that is free from needless formality and wasteful delays.

"There is a false impression that the Architectural League of America has been formed in opposition to the American Institute of Architects; our attitude towards that body should be one of deference and respect, and it is gratifying to report that the older organization has already extended us the hand of friendship. Some have resented the appeal to young men to join that body, because the Institute has failed to bring about certain reforms it stands for.

"We stand for architecture itself before the practice of architecture. We stand for 'American Architecture as Opposed to Architecture in America,' and we have the strength of our convictions.

"I must personally account for 'Progress before Precedent.' It was used because it seemed to indicate the sentiment of the Cleveland Convention. It may not clearly express our forward policy, but Mr. Robert D. Andrews, in his letter recently published in *THE BRICKBUILDER*, made clear our meaning by saying that it seemed to be identical in its sense with Mr. Hale's maxims:—

"'Look up, not down: look out, not in,' etc.

"We are alive to the possibilities of relating architecture more closely to the people, and, whether 'Progress before Precedent' is adopted or repudiated, is of little consequence.

"Should any one admit that architecture has lost its grasp upon life because the French have perfected a system whereby any problem may be rationally designed? Truly a marvelous system, which is so general that it must influence the architecture of the world, and yet it is only a system. We are seeking something deeper, and that is, expression. When our architecture obtains that quality, it will strike root in reality, and then, and not until then, will we have a living architecture."

The Committee on Municipal Improvements was unable to make a report, owing to the short time since its organization. Mr. Cass Gilbert, the chairman, however, sent the following recommendations for this branch of the League's work: "That this committee would find a field of action in every city in the United States; in many of our cities there are already organizations having similar objects in view, civic leagues, municipal improvement societies, and the like; communication should be established with these societies, and cooperation secured. It is believed that the League, as a national body, can work more effectively through local societies already established than by independent effort, and in return can give moral support and effective aid and assistance to the efforts of such societies. I recommend," his letter went on to say, "that we seek the cooperation of labor organizations, as we find in them a great body of citizens who would most directly share in the movements we favor, both in the work incident to the improvements and in their enjoyment afterwards. Such improvements work especially to their benefit, and they could not be slow to appreciate this fact." Mr. Gilbert further said that a special effort should be made to encourage the development of municipal improvements in cities of moderate size. This might be done by inviting the special study of the plans of such cities with papers, and plates, or sketches, showing what might be done at reasonable expense, how natural beauties could be preserved, and local points of interest be created, how a development could be intelligently wrought out along the natural lines of growth of the place in question.

Mr. Harder made a most gratifying report for the committee upon "The Code Governing Competitions in Design," showing that quite a number of new societies have adopted the code during the past year.

Thursday evening an open joint-meeting was held in the Art Institute under the auspices of the Architectural

League of America and the American Park and Outdoor Art Association. Two papers upon municipal improvement were delivered, both profusely illustrated by stereopticon views; the first by Mrs. Edwin D. Meade, of the Twentieth Century Club, of Boston, and the second by Mr. Albert Kelsey. Mrs. Meade's paper considered the subject from the layman's point of view and from the view-point of the tax-payer; while Mr. Kelsey's address was more technical, and sought to generalize upon the underlying principles which must govern the organic development of American cities.

At the second day's session the delegates took up the matter of general business and the reading of reports by delegates relating to the activity of individual clubs.

Mr. Wm. C. Hay's address upon Philadelphia's traveling scholarships was allied to these reports, and immediately followed them. It set forth the terms under which the two scholarships are awarded annually and the work which they bring forth. He called special attention to the T Square Club's experiment in this line, of awarding the scholarship for the best average obtained from a series of related competitions forming the work of the entire year.

One of the most noteworthy addresses delivered before the convention was that made by Mr. Elmer Grey. It was one of the first papers read, and this was the more fortunate because Mr. Grey struck the keynote that aroused an enthusiastic spirit early in the convention, an interest, moreover, which was sustained to the hour of adjournment.

His paper was well studied, broad and lucid in conception, and thoughtfully worked out. There were no reiterations and no extravagant assertions. He aimed to show how architectural evolution takes place, and how style is unconsciously called forth.

At the conclusion of the reading of Mr. Grey's paper, the chairman asked Mr. Louis H. Sullivan to express his views upon the subject.

Mr. Sullivan said that he had devoted years to study (and these since he left the *École des Beaux Arts*); that anything he might say would be fragmentary, as he had gone to the bottom and worked up only to a certain point, but that in beginning at the bottom, and by relating architecture and its development to the organic growth and unity of all things, he was sure he was right. Everything, he said, is either in a process of growth or decay, and along these lines for half an hour he held the audience to a man, in rapt attention. He never raised his voice, used no superlatives, and indulged in no clever clap-trap phrases to compel attention. Slowly, quietly, and surely he gained the attention and eager interest of every one in the room. While not a believer in books and schools, he admitted their usefulness as an agent in mental discipline, and it was mental discipline, the learning how to think rationally and quickly, that he talked of most. In referring to those who produce beautiful buildings by the use of a pencil in one hand and a photograph in the other, he simply called his hearers' attention to the fact that a man could not give his undivided mind to his work, could not pour his heart out unrestrained when compelled to seek inspiration from any source other than the actual conditions presented by the problem. He made no unpleasant references to the servile copyists, but, in alluding to their work, merely

said, "Francis I. is dead; all the people of that period are dead,—and they will stay dead!" Drawn, as we were, irresistibly, to his point of view, the analogy was pat and convincing. So he talked on without hitch and without losing the continuity of his remarks, and always following along the lines of his own philosophy.

Mr. Frank Wright, who followed with a carefully prepared paper entitled "The Architect," began by paying a graceful tribute to the preceding speaker, in which he said he feared that his hearers, having listened to the words of the master, would find those of the disciple but weak.

He devoted himself to questions of professional practice mainly, and did not spare the plan-factory magnate, the shyster, and the charlatan. He hit from the shoulder and hit hard. His paper was full of flashes of wit, which carried home to his hearers the points on which he dwelt. The man of "eminence" he showed up in his true colors, and he made a strong plea for the man of obscurity striving after an ideal other than money and a large practice. His paper was a fearless and outspoken utterance on a subject of moment to every person interested in architecture.

Prof. Alex. B. Trowbridge, of Cornell University, sent a paper entitled "The Education of the Architectural Student": a sober, sensible outline from the pedagogic standpoint, voicing the prevailing sentiment in the best architectural circles; and, doubtless, had Professor Trowbridge been present, he would have added to the value of his paper by the defense of his position in certain open questions.

After the adjournment of the morning session, a special train took the convention to Jackson Park where six-horse coaches awaited them, and the afternoon was spent in driving, viewing the park system, monuments of interest, etc. Supper was served in Bismark Garden, accompanied with orchestral music, songs, speeches, and general hilarity. At its close the convention returned for the night session. The principal business transacted at this session was the consideration of the new constitution. Report was received from Mr. Harder, of New York, who was chairman of the special committee appointed at the convention of the previous year to draught a permanent constitution to take the place of the provisional constitution adopted at that time.

The committee had draughted an excellent constitution, and after a debate of two hours it was adopted with a few slight modifications.

The most noteworthy feature of the permanent constitution is that which provides for the election of the president only by the convention, he then appointing a cabinet for one year, of men residing within 300 miles of his city.

At the Saturday morning session the first paper read was by W. Dominick Benes, of Cleveland, entitled "Our Duty." It called attention to the responsibility of the position that an architect occupies in his community, and emphasized the fact that he is looked up to as a leader in many matters bearing directly on the public welfare, and that to command respect an architect should be a man of irreproachable character and public spirit as well as thoroughly versed in the science of his profession.

Following this, a paper was read by the secretary from

Ernest Flagg on "American Architecture as Opposed to Architecture in America." Looking to the development of native expression in our architecture, Mr. Flagg is far from wishing to gallicize our architecture, but is emphatic in his belief in the importance of thorough training from the very beginning.

In the absence of Mr. A. O. Elzner, of Cincinnati, Mr. G. W. Drach read his paper upon "The Licensing of Architects." This proved to be a most opportune topic, and developed lengthy discussion. It will be remembered that the practice of architecture in the State of Illinois for the past two years has been governed by law, and that a State Board of Examining Architects, examines all new candidates for the profession. As the operation of this law has proven a most decided success, it was somewhat of a surprise to learn that the Cincinnati Chapter was opposed to having a license law passed in the State of Ohio. Professor Ricker, of the University of Illinois, and several other gentlemen of that State, pointed out numerous advantages which had already accrued under the present system, without, however, convincing Mr. Drach that the same advantages were to be obtained by its means in other States. Moreover, he pointed out with reason that an architect with a widely scattered clientele would be kept constantly busy passing examinations to keep up with his practice in the various States.

The next subject announced on the program was a paper upon the *irrepressible* maxim, "Progress before Precedent." Mr. Harder's profound contempt for the phrase, which had been used as the rallying-cry of the League, led him to treat the subject briefly and without written notes. Every one admitted that the phrase was open to misconstruction, and his denunciation stimulated others to suggest amendments of which "Progress *and* Precedent" was the most satisfying. After some little discussion it became evident that it was the sense of the meeting that the Architectural League, of America, was progressive enough, and sufficiently indebted to the past to get along without any motto at all, and upon vote it was so ordered. Nevertheless, to the bitter end this corpse was disinterred, and the two words "progress" and "precedent" were constantly introduced in opposition to one another, and in accord with each other, much to the amusement of all present.

It was decided among other things that it was unadvisable for the League to recognize any publication as its official organ, and a vote of thanks was tendered Mr. Kelsey for his efforts to promote the League in the pages of the Architectural Annual.

In selecting the place for the next convention there were but two societies soliciting the opportunity to entertain the League. These were the T Square Club, of Philadelphia, and the Toronto Architectural Club, and upon a vote it was decided to go to Philadelphia.

The election of a president for the ensuing year was contested with much enthusiasm and good-nature, Mr. J. C. Llewellyn, of Chicago, being elected. This formally closed the business of the convention.

At 8 o'clock a reception and banquet was given in honor of the visiting delegates at the Auditorium Hotel, by the Chicago Architectural Club. Mr. Daniel H. Burnham acted as toastmaster, and the new president was the first speaker. He outlined the duties confronting his

administration, and promised to keep his committees busy during the coming year. Adin B. Lacey, of Philadelphia, spoke upon the Architectural Club as a factor in public affairs. Arthur D. Rogers, of Boston, responded in a felicitous address to the text, "Are architectural societies and the Architectural Press fulfilling their mission?" and was several times applauded. A solo followed, and then Mr. Louis H. Sullivan read a serious paper upon "The Young Man in Architecture." Mr. Sullivan was listened to with the closest attention, and many present must have returned to their homes strengthened and stimulated by his earnest words.

The toastmaster next called on Mr. Oscar Enders, of St. Louis, for one of his clever and original architectural songs, which Mr. Enders sang greatly to the amusement of all present, being accompanied in the chorus by the entire St. Louis delegation. The concluding address was delivered by Mr. Dwight Heald Perkins, in which he summed up the sentiment of the convention.

THE YOUNG MAN IN ARCHITECTURE.

ADDRESS DELIVERED AT THE ANNUAL CONVENTION OF THE
ARCHITECTURAL LEAGUE OF AMERICA, AT CHICAGO.

BY LOUIS H. SULLIVAN.

IT is my premise that the Architectural League of America has its being in a sense of discontent with conditions now prevailing in the American malpractice of the architectural art; in a deep and wide sense of conviction that no aid is to be expected from the generation now representing that malpractice; and in the instinctive feeling that, through banding together, force, discretion, and coherence may be given to the output of these feelings which are, in themselves, for the time being, vague and miscellaneous, however intensely they may be felt.

Did I not believe that this statement substantially represents the facts, I should be the last to take an interest in your welfare; I would be indifferent concerning what you did or what you did not.

That you have abundant reason for discontent needs no proof. Let him read who runs through the streets.

That you have cause for discontent is evident. That you should *feel* discontent gives one a delightfully cynical sense of shock, and a new-born desire to believe in the good, the true, the beautiful, and the young.

American architecture is composed, in the hundred, of ninety parts aberration, eight parts indifference, one part poverty, and one part Little Lord Fauntleroy. You can have the prescription filled at any architectural department store or select architectural millinery establishment.

As it is my desire to speak from the view-point that architecture should be practised as an art and not strictly as a commercial pursuit, and as I am assuming that you agree with me in this respect, we may now pertinently inquire, Wherein does this American architecture differ from the architecture of the past?

It differs in little, if in anything, provided we except the few great epochs.

Human nature has changed but little since the time man was the slaughterer or the slaughtered of the great white bear,

Seldom, in the past, has man thought of aught but war, which menaced his life; religion, which menaced his soul; hunger, which threatened his stomach; or love, which concerned his progeny.

From time to time this tempestuous human sky has calmed, for a divine moment, and the glory of man has shone forth upon a fertile land. Then came again the angry elements, — and the sun departed.

This, in brief, is the recurrent history of man from the beginning. You may change the values in the formula to suit the epoch, the century, or the generation.

Ninety-nine years of the hundred the thoughts of nine hundred and ninety-nine people of the thousand are sordid. This always has been true. Why should we expect a change?

Of one hundred so-called thoughts that the average man thinks (and thus he has ever thought), ninety-nine are illusions, the remaining one a caprice.

From time to time in the past, these illusions have changed their focus and become realities, and the one caprice has become an overwhelming desire.

These changes were epoch-making.

And the times were called golden.

In such times came the white-winged angel of sanity.

And the great styles arose in greeting.

Then soon the clear eye dimmed.

The sense of reality was lost.

Then followed architectures, to all intents and purposes quite like this American architecture of to-day: —

Wherein the blind sought much discourse of color.

The deaf to discuss harmonies.

The dry heart of twaddled about the divinity of man.

The mentally crippled wrought fierce combats in the arena of logic.

And so it has come about that the white-winged angel has been on a far journey these six hundred years.

Now, insisting for the moment, in spite of the hierarchy, that this white-winged absence is of gentle sex, I entreat your close attention: —

Let radiant and persuasive Youth lure her back again to earth!

For that she hovers in the visible blue of your firmament, I can prove to you beyond a gossamer of doubt.

That she awaits with eager ear the spring-enthralled voice of adolescence, the clear, sweet morning-call of a pure heart, the spontaneity and jocund fervor of a bright and winning mind, the glance of a modest and adoring eye!

That she awaits.

That she has so long awaited.

That she cannot make herself first known to you, —

Alas, 'tis of her enchantment that she is invisible and dumb!

Perhaps this is enough of poesy.

Let us say, enough likewise of the prevailing cacophony; of

The howling of the vast and general horde of Bedlamites.

The purring of the select company of Ruskinites.

The gasping of the Emersonites.

The rasping of the Spencerites.

The moaning of the Tennysonites.

The whimper of the æsthetes.

The yowling of reformers.
 The yapping of strenuous livers.
 The rustle of the rustlers.
 The hustle of the hustlers.
 The howl of the tax-payers.
 And the clang of the trolley car, —

All, "signs, omens, and predictions" of our civilization.

We are commanded to know that there is much of mystery, much of the esoteric, in the so-called architectural styles. That there is a holiness in so-called "pure art," which the hand of the modern may not profane.

So be it.

Let us be the cat.

And let the pure art be the king.

We will look at him.

And we will also look at the good king's good children, the great styles,

And at his retinue of bastards, the so-called "other styles."

There is, or at least there is said to be, a certain faculty of the mind, whereby the mind or the faculty, as you choose, is, on the one hand, enabled to dissolve a thing into its elements, and, on the other hand, to build up these or similar elements into the same or a similar thing. This process is, I believe, called logic. The first operation going by the name, analysis, and the second, synthesis. Some men possess the half-faculty of separating; others, the half-faculty of upholding. When the whole faculty exists in one man, in a moderate degree, he is said to be gifted. When he has it in a high degree, he is said to be highly gifted, and when in the highest degree, he is called a genius or a master-mind. When a man has neither the one half-faculty nor the other half-faculty, he is mentally sterile.

I fear lest the modern architect be placed in this category, by reason of his devious ways.

Let us suppose ourselves, nevertheless, moderately gifted, and apply our analysis to the great styles: —

Presto, dissolve!

We have as residuum two uprights and a horizontal connecting them.

We have two bulky masses and an arch connecting them.

Revolve your arches and masses, and you have a dome.

Do the trick a few times more with a few other "styles," and you have the *Elements of Architecture*.

We approach in the same way a master-mind, and all speedily disappears, leaving insoluble DESIRE.

The architectural elements, in their baldest form, the desire of the heart in its most primitive, animal form, are the foundation of architecture.

They are the dust and the breathing spirit.

All the splendor is but a gorgeous synthesis of these.

The logic of the books is, at best, dry reading; and, moreover, it is nearly or quite dead because it comes at second hand.

The human mind, in operation, is the original document.

Try to read it.

If you find this for the moment too difficult and obscure, try to study a plant as it grows from its tiny seed

and expands towards its full fruition. Here is a process, a spectacle, a poem, or whatever you may wish to call it, not only absolutely logical in essence, because exhibiting in its highest form the unity and the duality of analysis and synthesis, but which is of vastly greater import, *vital* and *inevitable*; and it is specifically to this phenomenon that I wish to draw your earnest attention, if it be true — and I sincerely hope that such is the fact — that you wish to become real architects, not the imitation brand. For I wish to show to you, or at least to intimate to you, how naturally, and smoothly, and inevitably the human mind will operate if it be not harassed or thwarted in its normal and instinctive workings.

Some day, watch the sun as he rises, courses through the sky, and sets.

Note what your part of the earth does meanwhile.

Ponder the complex results of this simple, single cause.

Some year, observe how rhythmically the seasons follow the sun. Note their unfailing, spontaneous logic; their exquisite analyses and syntheses; their *vital, inevitable* balance.

When you have time or opportunity, spare a moment to note a wild bird flying; a wave breaking on the shore. Try to grasp the point that while these things are common they are by no means commonplace.

Note any simple thing or act whatsoever, provided, only, it be natural, not artificial; the nearer undisturbed Nature the better; if in the wilderness better still, because wholly away from the perverting influence of man.

Whenever you have done these things attentively and without mental bias or preoccupation, wholly receptive in your humor, there will come to your intelligence a luminous idea of *simplicity*, an equally luminous idea of a resultant organic complexity, which, together, will constitute the first significant step in your architectural education, because they are the basis of rhythm.

There will gently dawn in your minds an awakening of something vital, something organic, something elemental, that is urging the things about you through their beautiful, characteristic rhythms, and that is holding them in most exquisite balance.

A little later you will become aware with amazement that this same impulse is working on your own minds, and that never before had you suspected it. This will be the second step in your architectural education.

Later you will perceive with great pleasure that there is a notable similarity, an increasing sympathy between the practical workings of your own minds and the workings of Nature about you.

When this perception shall have grown into a definite clear-cut consciousness, it will constitute the closing of the first chapter, and the opening of all the remaining chapters in your architectural education, for you will have arrived at the basis of organized thinking.

You will have observed, doubtless, that thus far, while endeavoring to lead you toward a sane and wholesome conception of the basis of the architectural art, I have said not a word about books, photographs, or plates. I have done this advisedly, for I am convinced beyond the shadow of a doubt that never can you acquire from books, or the like, alone, even a remote conception of what constitutes the real, the living, architectural art. It

has been tried for generations upon generations with one unvarying result,—dreary, miserable failure.

To appreciate a book at its just value, you must first know what words signify, what men signify, and what Nature signifies.

Books, taken in their totality, have one ostensible object, one just function: namely, to make a record of man's relation to his fellow-men and to Nature, and the relation of both of these to an all-pervading, inscrutable spirit.

To these relations, mankind, in its prodigious effort to define its own status, has given thousands upon thousands of names.

These names are called words.

Each word has a natural history.

Each word is not the simple thing it appears, but, on the contrary, it is a highly complex organism, carrying in its heart more smiles, more tears, more victories, more downfalls, more bloody sweats, more racial agonies, than you can ever dream of.

Some of these words are very old,—

They still cry with the infancy of the race.

Therefore, should I begin by putting into your hands a book or its equivalent, I would, according to my philosophy, be guilty of an intellectual crime.

I would be as far from the true path as I now most heartily regard most teachers of the architectural art to be.

I would be as reckless and brutal as my predecessors.

But I would not be as unconscious of it as they appear to be.

Therefore, I say with emphasis, *begin by observing*.

Seek to saturate your minds by direct personal contact with things that are natural, not sophisticated.

Strive to form your own judgments, at first in very small things, gradually in larger and larger things. Do not lean upon the judgment of others if it is reasonably within your power to form your own.

Thus, though you may often stumble and wander, such experiences will be valuable because personal; it is far better that they occur in youth rather than in maturer years. Gradually, by virtue of this very contact with things you will acquire that sure sense of physical reality which is the necessary first step in a career of independent thinking.

But strive not, I caution you, after what is called originality. If you do, you will be starting in exactly the wrong way. I wish distinctly to impress upon you, that what I am advocating, and what I in turn am striving to point out to you, is, the normal development of your minds. That if the mind is properly nurtured, properly trained, and left free to act with spontaneity, individuality of expression will come to you as naturally as the flower comes to the plant, for it is Nature's law.

When you begin to feel the glow and stimulation of mind which are first-fruits of wholesome exercise of the faculties, you may begin to read the books. Read them carefully and cautiously, not superciliously.

Bear in mind that books, generally speaking, are composed mainly of sophistries, assumptions, borrowings, stealings, inadequate presentations or positive perversions of truth.

The author, too frequently, is posing, masquerading, or ambuscading. His idea is to impress you. He him-

self wells knows how little he has to say that can in strictness be classed as truth in his possession only.

You will soon have no trouble in discerning the exception, and the exceptions, by their value, will conclusively prove the rule.

Later you may turn from the documents called books to the documents called buildings, and you will find that what I have said of books applies with equal force to buildings and to their authors. Soon you will be enabled to separate the wheat from the chaff.

Thus, one after the other, you may pass in review the documents called Music, Painting, Sculpture, Agriculture, Commerce, Manufactures, Government, etc.

You will find them, for your purposes, much alike.

You will, ere long, acquire an inkling of the fulness and the emptiness of these documents, if, as I advise, you keep closely in touch with Nature.

When you know something more of the working of the human mind than you now know (and the day will not be long in coming, if you follow the program I am indicating), you will not be greatly surprised, when taking a backward glance, that those in high places to-day seemingly believe, or profess to believe, that the fruit need bear no relation to the tree.

You will be no more amused than I am at the psychological irony presented by the author of a callously, illogical building, declaring in solemn tones that it is the product of a logical mind.

You will smile with wonderment when you recall that it is now taught, or appears now to be taught, that like does not beget like, whereas you will know that Nature has for unnumbered ages and at every instant proclaimed that like can beget nothing but its like:—

That a logical mind will beget a logical building.

That an illogical mind will beget an illogical building.

That perversity will bring forth perversity.

That the children of the will mind reveal the parent.

You will smile again when you reflect that it was held in your youth that there was no necessary relationship between function and form. That function was one thing, form another thing.

True, it might have seemed queer to some if a pine tree had taken on the form of a rattlesnake, and, standing vertically on its tail, had brought forth pine cones; or, that a rattlesnake, *vice versa*, should take on the form of a pine tree, and wiggle along the ground, biting the heel of the passerby.

Yet, this suggestion is not a whit queerer than are some of the queer things now filling the architectural view; as, for instance, a steel frame function in a masonry form.

Imagine, for instance:—

Horse-eagles.

Pumpkin-bearing frogs.

Frog-bearing pea vines.

Tarantula potatoes.

Sparrows, in the form of whales, picking up crumbs in the streets.

If these combinations seem incongruous and weird, I assure you, in all seriousness, that they are not a whit more so than the curiosities encountered with such frequency by the student of what nowadays passes for architecture.

With this difference only, that, inasmuch as the similarity is chiefly mental, it can produce no adequate impression on those who have never felt the sensitizing effect of thought.

You will remember that it was held that a national style must be generations in forming, and that the inference you were to draw from this was that the individual should take no thought for his own natural development because it would be futile so to do, — because, as it were, it would be an impertinent presumption.

I tell you exactly the contrary: Give all your thought to individual development, which it is entirely within your province and power to control; and let the nationality come in due time as a consequence of the inevitable convergence of thought.

If any one tells you that it is impossible within a lifetime to develop and perfect a complete individuality of expression, a well-ripened and perfected personal style, tell him that you know better, and that you will prove it by your lives. Tell him with little ceremony, whoever he may be, that he is grossly ignorant of first principles, — that he lives in the dark.

It is claimed that the great styles of the past are the sources of inspiration for this architecture of the present. This, in fact, is the vehement assertion of those who "worship" them.

Would you believe it? Really, would you believe it?

So it appears that like *can* beget its unlike after all. That a noble style may beget, through the agency of an ignoble mind, an ignoble building.

It may be true that a blooded male may beget, through a mongrel female, a cur progeny. But the application of this truth to the above instance, wherein occurs the great word, INSPIRATION implies a brutal perversion of meaning and a pathetic depravity in those who use that word for their sinister ends.

For inspiration, as I conceive it, is the intermediary between God and man, the pure fruition of the soul at one with immaculate nature, the greeting of noble minds.

To use this word in a tricky endeavor to establish a connection legitimizing the architecture of the present as the progeny of the noblest thought in the past is, to my mind, a blasphemy, and so it should appear to yours.

In truth, the American architecture of to-day is the offspring of an illegitimate commerce with the mongrel styles of the past.

Do not deceive yourselves for a moment as to this.

It is a harsh indictment.

But it is warranted by the facts.

Yet let us not be too severe. Let us remember and make what allowance we may for the depressing, stultifying, paralyzing influence of an unfortunate education.

After all, every American man has had to go to school. And everything that he has been taught over and above the three R's has been in essence for his mental undoing.

I cannot possibly emphasize this lamentable fact too strongly.

And the reason, alas, is so clear, so forcible, so ever-present, — as you will see.

We live under a form of government called Democracy. And we, the people of the United States of America, constitute the most colossal instance known in history of

a people seeking to verify the fundamental truth that self-government is Nature's law for man.

It is of the essence of Democracy that the individual man is free in his body and free in his soul.

It is a corollary therefrom, that he must govern or restrain himself, both as to bodily acts and mental acts; that, in short, he must set up a responsible government within his own individual person.

It implies that highest form of emancipation, — of liberty, physical, mental, and spiritual, by virtue whereof man calls the gods to judgment, while he heeds the divinity of his own soul.

It is the ideal of Democracy that the individual man should stand self-centered, self-governing, — an individual sovereign, an individual god.

Now who will assert, specifically, that our present system of higher architectural education is in accord with this aspiration? That the form, Education, bears any essential relation other than that of antagonism to the function Democracy? \

It is our misfortune that it does not.

We, as a people, are too youthful. We are too new among the world forces. We are too young. We have not yet had time to discover precisely the trouble, though we feel in our hearts that something is amiss. We have been too busy.

And so comes about the incongruous spectacle of the infant Democracy taking its mental nourishment at the withered breast of Despotism.

To understand it from our point of view, examine. These are the essential points:—

We are to revere authority.

We are to take everything at second hand.

We are to believe measurements are superior to thought.

We are advised not to think.

We are cautioned that by no possibility can we think as well as did our predecessors.

We are not to examine, not to test, not to prove.

We are to regard ourselves as the elect, because, forsooth, we have been instructed by the elect.

We must conform.

We are not to go behind the scenes.

We are to do as we are told and ask not foolish questions.

We are taught that there is a royal road to our art.

We are taught hero worship.

We are not taught what the hero worshiped.

We are taught that Nature is one thing, man another thing.

We are taught that God is one thing, man another thing.

Does this conform to the ideal of Democracy?

Is this a fitting overture to the world's greatest drama?

Is it not extraordinary that we survive it even in part.

Is it a wonder that our representative architecture is vapid, foolish, priggish, insolent, and pessimistic!

Manifestly, you cannot become truly educated in the schools.

Ergo, you must educate yourselves.

There is no other course, — no other hope.

For the schools have not changed much in my generation; they will, I fear, not change much in your generation, and soon it will be too late for you.

Strive! strive, therefore, while you are young and eager to apply to your mental development the rules of physical development.

Put yourselves in training, so to speak.

Strive to develop in your minds the agility, flexibility, precision, poise, endurance, and judgment of the athlete.

Seek simple, wholesome, nourishing food for the mind.

You will be surprised and charmed with the results.

The human mind in its natural state, not drowsed and stupefied by a reactionary education, is the most marvelously active agency in all Nature.

You may trust implicitly in the results of this activity, if its surroundings are wholesome.

The mind will inevitably reproduce what it feeds upon.

If it feeds upon filth, it will reproduce filth.

If it feeds upon dust, it will reproduce dust.

If it feeds upon Nature, it will reproduce Nature.

If it feeds upon man, it will reproduce man.

If it feeds upon all of these, it will reproduce all of these.

It will reproduce infallibly whatever it is fed upon.

It is a wonderful machine; its activity cannot wholly be quenched except by death. It may be slowed down or accelerated; it cannot be stopped.

It may be abused in every conceivable way, but it will not stop, even in insanity, even in sleep.

So beware how you tamper with this marvelous mechanism, for it will record inevitably, in all its output, whatever you do to it.

The human mind is the summation of all the ages. It holds in trust the wisdom and the folly of all the past.

Beware what you do to it, for it will give you bad for your bad, good for your good,—

It is a mechanism of such inconceivable delicacy and complexity.

Man through his physical infancy is most carefully nurtured.

His delicate and fragile, helpless little body is tenderly watched with all the solicitude of parental affection.

Indeed, under the law he is still a child until the age of twenty-one.

But his mind! Who cares for his mind?

After he has passed from the simple, beautiful ministrations at his mother's knee, who guards this ineffably delicate, impressionable organism?

Oh, the horror of it!

Oh, yet gods! Where is justice? where is mercy? where is love?

To think that the so-called science of political economy is so futile, so dragged with feudalism, that it has not noted this frightful waste, this illogical interruption of the happiness of the human family, this stark, staring incongruity in our education.

That it does not perceive, in its search for the sources of wealth, the latent richness of the human mind, its immense wealth of practical possibilities, the clearly marked indications of enormous productiveness,—a productiveness sane and of vital consequence to the public welfare.

So much for a science which regards man as a mechanical unit.

It is typical, in a measure, of the learning we have donned as a misfit garment.

You have every reason to congratulate yourselves that you are young, for you have so much the less to unlearn, and so much the greater fund of enthusiasm.

A great opportunity is yours. The occasion confronts you. The future is in your hands,—will you accept the responsibility, or will you evade it?

That is the only vital question I have come here to put to you.

I do not ask an answer now.

I am content with putting the question.

For it is the first time that the question ever has been put squarely to you.

I ask only that you consider this:—

Do you intend, or do you not intend, do you wish or do you not wish, to become architects in whose care an unfolding democracy may entrust the interpretation of its material wants, its psychic aspirations.

In due time, doubtless, you will answer in your own way.

But I warn you the time left for an answer in the right way is acutely brief.

For young as you are, you are not as young as you were yesterday,—

And to-morrow?

To-morrow!

AMERICAN ARCHITECTURE AS OPPOSED TO ARCHITECTURE IN AMERICA.

PAPER READ BEFORE THE SECOND ANNUAL CONVENTION OF
THE ARCHITECTURAL LEAGUE OF AMERICA, AT CHICAGO.

BY ERNEST FLAGG.

AT no time since the Europeans first began to build in America has there been anything which might properly be called an American style of architecture. There have been American ways of building, as, for instance, our high buildings with the skeleton construction, and the cast-iron fronts of thirty or forty years ago, but the decorated features have been used in accordance with passing fashions, supposedly modeled on European usage, with no such modification as would stamp them with what might be called an air of nationality, or else they have been extraordinary attempts by individuals at originality. None of these attempts have met with popular favor.

All the so-called "styles" of the past have been created by a slow system of evolution from what has gone before, accomplished by the combined effort of all the minds engaged, working along the same lines, each one contributing his infinitesimal share to the never-ending process,—a process which is precisely similar to that which produces our fashions in dress. No one knows exactly who is responsible for the change, but we can see that change is always in progress; to the uninitiated it may not seem very apparent from year to year, but if we compare the fashions in dress at intervals of ten or fifteen years, the change is striking enough for any one to distinguish. So it is in architecture, though, owing to the

nature of the materials used, change occurs more slowly. If we study the history of architecture in Europe, we shall find that, from the tenth century, all the great changes in style were simultaneously common to all the countries. Thus we find in practically all European countries at about the same epoch the styles which are classified in a general way as Romanesque, Gothic, Renaissance, Rococo, etc., but in each country or province, soon after their introduction, they assume a distinctive local character. We also find that some one country is in advance of the others, and that every great change spreads rapidly from the place where it was first developed to all the other countries, but that the minor changes do not spread rapidly, and are confined generally to the different localities where they originate, and go to make the local or national distinctions of the general style. It is natural that, as communication becomes more rapid between different sections, these local differences should disappear, and this is exactly what we find has happened. In France, for instance, during the Gothic epoch, we find distinct local characteristics in the different provinces,—thus the Burgundian, Aquitanian, Touranian, those of the Isle de France, etc.,—while to-day the style is national, or, we may say, Parisian.

Now it seems not at all unlikely that the causes which have led to the breaking down of the barriers between the different provinces of one country will in future operate to break down the barriers between the different countries: that local characteristics will become less and less pronounced, and that even the minor changes in the fashion of building will tend to become more worldwide. This is exactly what has occurred in the fashions for dress. Local distinctions are rapidly passing away, and a dress that is fashionable to-day in Paris is also fashionable in New York, Berlin, Rome, St. Petersburg, London, and in every other civilized capital. If France leads in this respect, and the others follow, it must be because there is in the French mind a quality which fits it to lead in such matters, for the bondage of the other nations is entirely voluntary.

Owing to the peculiar situation of America, and to the natural independence and lack of reverence of the American mind, the course of architecture here has presented an anomaly in the development of style, and rules which apply elsewhere do not seem to apply here. Nevertheless, it is very certain that the process of development which works everywhere else will, in time, be found working here; indeed, it becomes more evident daily that this process is already well under way. The foundation for any such development must necessarily begin with the schools. In every European country we find that, before the young men begin to build, they undergo a long process of training, either in schools or as apprentices, to fit them for the work. In the past we have thought such preparation unnecessary. Almost every young American, as soon as he is able to draw a straight line, has felt himself competent to undertake any work of architecture, and not only that, but he has found that most people have been ready to agree with him in this way of thinking. People having large sums to invest, if not willing to entrust them to him at the start, have been willing to do so after a few years, when he is supposed to have had the necessary experience. These methods still

hold true in many places to-day. Physicians, engineers, lawyers, and other professional men must have been properly trained before they are employed; not so with architects. Most employers, indeed, feel that they are very good architects themselves, and few have any distinct notion of what constitutes an architectural training.

This is an entirely unnatural state of affairs, and no one who understands the American mind can believe that it will last. Indeed, there is, at the present time, every indication that it will not last. Schools of architecture multiply on every side; young men flock abroad to seek architectural training, and the results of this movement are already beginning to be apparent in our architecture. Fortunately, this force is a unifying one. I say fortunately, though I doubt if it could be otherwise. The great majority of our students are thinking and working in the same style, though this can by no means be said of our practising architects. They are for the most part still borrowing from any epoch of antiquity, or designing in a style of their own invention, as the fancy seizes them. They deprecate what they call the "Frenchifying" of American architecture, as if there were any such thing as American architecture in the hodge-podge which we see about us.

In the mean time, the French influence is slowly but surely predominating. Our young men go to Paris and become convinced of the wisdom of the French methods. From the great masters of the French school, under whose influence they are brought, they imbibe such logical, reasonable, and convincing instruction that I do not believe it possible for a young man, anxious to learn, to come away unconvinced. The converts which these men make after they return, among the young men who themselves are not able to go abroad, are as ten to one.

A revolution is in full progress among us, and it is beginning just where it ought to begin, that is, with the students. Let no one mistake the introduction of what appears to be modern French architecture as only a passing fancy to go the way of the "Richardsonian Romanesque," "Queen Anne," and "Italian Renaissance." It is an entirely different affair. It means much more than appears on the surface. The French resemblance is only an incident; it may, indeed, soon pall and pass away, but the movement means that the principles which the French use are being introduced here, and these will last because they are founded on good taste, guided by common sense. Henceforth, American architects are to be properly instructed before they enter upon their duties. American architecture is not to be "Frenchified," unless France can dominate the fashions of the world in building by her taste and skill, as she has dominated them in dress. The movement means that our architects of the future will apply to the art in this country the same logical reasoning, and that they will have the same careful preparation for the work that helps the Frenchman to lead the world in the fine arts. It also means that, in the future, the whole body of American architects are to work together along the same lines—to think in the same style. Thus we are about to enter upon a course which will make possible the evolution of a national style of our own, or perhaps enable us to set the fashion for the world.

INDIGENOUS AND INVENTIVE ARCHITECTURE FOR AMERICA.

PAPER READ AT THE SECOND ANNUAL CONVENTION OF THE
ARCHITECTURAL LEAGUE OF AMERICA, AT CHICAGO.

BY ELMER GREY.

ONE of the purposes of this organization, as expressed in your constitution, is "to encourage an indigenous and inventive architecture, and to lead architectural thoughts to modern sources of inspiration."

In commenting upon the manner in which such purpose shall be attained, in the hope that my point of view may not be without some value, I shall assume that the indigenous and inventive qualities in our architecture will, when obtained, appear in its *style*. Next, I propose to indicate, as clearly as I am able to, the nature of this quality called style; and then I shall take up the words "indigenous" and "inventive" in their order, and attempt to show how, in my opinion, we can best go about to attain to an "indigenous and inventive architecture" in America.

The nature of an architectural style is closely akin to the nature of the personal style of an individual. In the case of the individual it is, of course, the result of his continued endeavors to improve his character. In doing so he does not ape some one else, neither does he discard the example of heroic types that have lived before him, or who are living in his own time. He attempts to discover the laws which ruled or rule such lives, and endeavors to follow similar laws in arranging his own conduct.

In much the same way is style in architecture evolved. We are not to copy past styles, neither are we to consider them useless as modern sources of inspiration. We are to try to discover the laws which governed their success, to discern how those laws should be modified to suit existing conditions, and then to apply them in the solution of our own problems. The result will be beauty, the exact nature of which we may not be able to define, but, like the quality in a man of which he is unconscious, but which others feel to be his personal atmosphere or style, it will be all the more vital and all the more precious because defying analysis.

In attempting to discern the modifications to be made to the laws which governed the success of past styles, we are to consider, first, our increased complexity of material requirements over those of past ages, as are brought about by an advanced social condition; and the means of satisfying such increased demands afforded us in improved methods of construction and in new forms of building material. We are also to consider that in all ages artists have drawn upon the work of their predecessors in seeking for inspiration, and that we are particularly fortunate in having more of such precedent to draw from, and in being provided, through the art of photography and through facilitated travel, with much readier means of success to it.

These are some of the considerations that should be incorporated as modifications of the laws which governed the success of past styles, and of the laws which we are to apply as aids in evolving a style of our own.

Now, how can we best go about to attain to an "in-

digenous" architectural style in America? What should be our sources of inspiration in aspiring to it? Are we, in seeking for them, to expect that they will appear only in things which refer to a building's external adornment? And even so, would we, in an appreciation of the beauty of all the architectural ornament of other times, and of our many facilities for enjoying it, be likely to express such appreciation in our art did we reject as sources of inspiration all things not American? Surely not. The sources of inspiration for an indigenous style of American architecture are not thus limited. Style is *not* the external adornment of a building: it is the vital quality of it which has resulted from conditions inherent in its making, and which include situation, cost, material requirements, the constructional means available for meeting those requirements, and the ornament with which it was thought fitting to clothe it.

And the modern sources of inspiration for an indigenous style of architecture in America lie in a perception of the possibilities of the sites of our structure, in a knowledge of the most advantageous method of disposing the money available for their erection, in the insight which shall discern the vital offices buildings should fulfil, and the manner in which they should fulfil them, in the familiarity with the building methods and building materials best adapted to accomplish such fulfilment; and finally in *all* things which suggest the forms of ornament most fitting for the purpose of adorning our structures.

And now how can we have an "inventive" architecture for America, that is, a *new* architecture, one that did not before exist, — an architecture that shall be not only distinctively American in its style, but that shall also be new in its style?

In an address before the Boston Architectural Club, in October, 1893, Mr. Robert D. Andrews said: "I think it is the custom nowadays to put our conscious effort in the wrong place in the treatment of art. We put it at the end, when it ought to be at the beginning. We elaborate our superstructure, but treat the foundation as of little account." I believe that custom still prevails.

The poets never tire of calling our attention toward the Unity of Life, toward the intimate relation all living things bear to one another, and toward the fact that this relation is a far more intimate one than we almost always feel it to be. Scientific research in all its ablest conclusions emphasizes the same point, insists upon the Oneness of all Nature and all Life; upon the fact that each plant in Nature is not a self-dependent organism, but that its health and its life is governed by a force which controls and sustains all living objects; upon the fact that a man is not an independent organism, but that, whether he is conscious of it or not, his fortunes are governed by a higher ambition than his own, though he is given free will to choose between the good and the bad, his final destiny will rest upon obedience or disobedience to physical, moral, and spiritual laws, over which he has no control.

Now art — that is, living art, true art, art that is not merely a thing of dead forms and formulas — is one of the most potent expressions of human life. It is the conservation culminated in material form of all the artist has had of knowledge, of skill, of experience, of character;

and it is subject to the same laws which govern life, and is a part of the same great unity; so that by ascertaining how those laws operate in the production of new things, of inventive things in Nature or in life, we shall also see how they operate in the creation of new things in art.

In Nature we find that a plant produces in leaves, flowers, and fruit only that which it has been able to draw in another form from the earth, the sun, and the air; and that its perfection and distinction of type is directly dependent upon the success with which it obtains such nourishment in qualities and quantities suited to its particular needs. And in life we know that a man can give out only that which in another form he has previously taken in; and that the distinctness of his individuality, and the value and amount of his productiveness, will directly depend upon his knowledge of the sources of power which best sustain him, and upon his obedience to the laws which govern his nature.

And so it is in art. For the artist is not an independent worker having supreme control over the quality and number of his creations. He is a part of a divine order of life from which all his efficiency springs; and the originality and sustained excellence of his work depend upon the degree to which he becomes conscious of his relation to that order, and upon his recognition of, and obedience to, its laws in their application to his life.

Now the application of universal law which governs the life of an individual artist, each artist must discover for himself through the process of living, but some of the laws themselves in their wider bearing upon all artists' lives may here be briefly enumerated. The artist, then, is first a man and is to know himself and the world; that is, he is to recognize the natural equipment for work with which he has been endowed, the degree and nature of its power, and also its limitation; and he is to try to discover the place it should occupy in the world's entire economy. As a man, he is also to recognize the importance of the physical side of his being, and he is to see that it is kept in the highest condition of efficiency for sustaining the work of his brain.

Then the artist is a member of a social body; and if his work is to meet the highest demands of that body and to satisfy its best taste and judgment, he must obey the moral laws which require that he place himself in sympathy with that body. And herein enters the subject of compensation. For as a member of a social body the artist will increase in every possible way his own power for usefulness and good, and the power which rests in the wise use of money is one not to be ignored. On the other hand, if his work is to satisfy his own conscience and to secure him the largest degree of self-development, as well as to bestow the greatest benefit upon his client and to accord with the highest public welfare, he will not place pecuniary gain higher in the scale of values than he will excellence in the quality of the work he puts forth.

And now we come to the spiritual laws governing the life of an artist. We readily recognize the operation of physical and moral laws in our work, but we have yet to realize more fully that the artist is also a part of a universal spiritual order from which beauty of the highest kind has always come, and that if he is to produce a new beauty, an inventive beauty, which shall have a real and

enduring charm, he must first absorb in other forms that which he creates.

For beautiful things of lasting quality in architecture and in all the arts are not tricks of clever fancy which some fortunate ones may discover: they are the result of an assimilation of many kinds of order, and of beauty, and of truth into the soul of the artist, where they undergo an unconscious process of transmutation into the creations which his imagination brings forth, and which his knowledge, his skill, and his character shape into new material form.

He may obtain this nourishment from all sources which he finds will enrich him: from Nature, from human experience, from religion, from literature, from painting, from the architecture of the past. But whatever sources he selects should be capable of refreshing him continuously. For the artist is constantly spending his vitality in creative work, and so must continually renew it. Both operations are equally important parts of a creative process, and should be equally instinctive habits of the artist's life. They are analogous to the workings of Nature in her method of giving birth to all living things, and such instinctive habits have always been those of the man of creative genius through whom all true art has been evolved.

Now the architectural style of a country is the result of prolonged endeavor on the part of architects to erect buildings which shall accord with the best taste and with the soundest judgment of a people; and though the endeavors of those architects may often be thwarted and the accomplishment of their purpose seem at times a long way off, a higher power than their own will guide the course of events, and a mightier destiny than any private or public ambition will finally determine the quality and the permanence of the country's architectural style.

Important movements in architecture, such as the so-called Romanesque of Richardson, occasioned by the influence of creative men of exceptional individuality, may prevail for a while. The demands of unhealthful social conditions, such as inordinate accumulation of wealth by classes of people who lack corresponding degrees of culture, may result in the vulgar and ostentatious over-adornment of their buildings. But the architecture of a country which will be truly representative in style, and which will endure with a lasting beauty, will voice the highest ideals of its people, and will spring from the hearts of conscientious men who have accomplished the architectural expression of its noblest national life.

The attainment of such an architecture involves a process of growth which cannot be hastened. It requires a condition of wide and deep culture in the people of a country, and a corresponding degree of culture in its architects; and though we have such culture in this country, either the reconciliation between the people who possess it and the forms through which it is trying to find architectural expression is not complete enough to point definitely toward the qualities which distinguish an architectural style, or, the intangible nature of style prevents our recognition of as much of one as we may have.

Perhaps, unknown to us, it is taking form in the many noble architectural monuments that have been and are being built by contemporaries. For all architectural

beauty which is natural and vital to the best American life will contribute to the growth of an indigenous and inventive American architecture.

To further the growth of such an architecture in every possible manner should be our ambition; our methods should correspond with the noblest methods of men who are working for the benefit of mankind in other walks of life, and our hope of success should lie in a consciousness of our relation to the divine Source of all Life, of all growth, and of all accomplishment.

ARCHITECTURAL EDUCATION.

PAPER READ AT THE SECOND ANNUAL CONVENTION OF THE
ARCHITECTURAL LEAGUE OF AMERICA, AT CHICAGO.

BY ALEXANDER BUEL TROWBRIDGE.

THE very recent agitation affecting the motto, "Progress before Precedent," has attracted the attention of the professors of architecture, who have noted with regret that some of these architectural walking delegates have assumed unfriendly, even hostile, attitudes toward the schools. It is safe to assume that men differ in a great variety of ways in their interpretation of this motto, and that probably very few of the "young men of the Middle West" really hope, down in their hearts, that the schools will drop precedent and reorganize on a Nature-study basis. Possibly it is overstating it to assume that this is the wish of Mr. Dean and his friends; yet that is what one may very easily gather from Mr. Dean's several articles which have appeared within the past year in the architectural magazines. An accepted definition of an anarchist is "one who believes the world so good as to need no laws." While such a state of affairs is devoutly to be wished, no one in this assemblage believes for a moment that it would be safe, or even reasonable, for us as a nation, for instance, to suddenly drop our system of laws and enforcement of laws. In the same way we may accept in perfect faith all that Mr. Dean advocates as something very desirable, but we cannot for a moment dream of flying from the traditions, the laws, the precedent, that have been willed to us by our professional forefathers. We are inclined to the opinion that the "young men of the Middle West" are taking themselves too seriously. At present we agree with Messrs. Wyatt and Nolting, of Baltimore, who very aptly state: "We suggest that, before writing and theorizing more on the subject, he would produce actual work by his proposed methods, which will be accepted by the art world as superior to that produced by the training of either the American or European schools." The professors of architecture will give an enthusiastic reception to any new piece of work which shows truth, logic, and fitness. It must not be forgotten, however, that no matter how excellent some of this inventive work is to be, it cannot reduce the intrinsic merit of some of the modern buildings which we have all enjoyed together, and which everywhere show the influence of precedent.

We recall a sentence from something that was said, if we remember rightly, by Mr. Sullivan, to whom many turn in their search after originality. If the quotation is not exact, at least the meaning is the same, "Learn

what is in the books, and then throw the books away." There is a good deal of sound wisdom in that advice for men of Mr. Sullivan's strength, but how many consider themselves in his class? Suppose, for example, we should accept this advice and apply it to the students in our schools. How long would it take the average student to learn what is in the books? We think a lucky man would, perhaps, feel that he had a good grasp of what the books contain after he had practised architecture twenty-five or thirty years. We know some humble-minded professors of architecture who feel that three-score years and ten are not enough time for the proper study of architecture. Suppose, now, we adopt the modest plan of flying from precedent, depending upon the natural talent and inventive genius of our students for our academic results. We turn a class of beginners loose in a draughting room, lock the library doors, issue a program which calls for some architectural character, and then wait for the sparks of genius to illuminate the blank sheets of Whatman. We might extend the experiment so that it would be fully tried upon one class of students during its entire four years of stay with us. What would be the result? Our students would either emigrate to the "Middle West" and become great architects, or they would hurl maledictions at us for the rest of their lives. The latter is the more probable result.

It may be that we have been extreme in our assumption that Mr. Dean and his co-workers desire so great a departure from precedent. If, however, one bit of historic detail is inappropriate to our age, why are not all bits of historic detail? If it is wrong to use a Greek triglyph or a Greek column to-day because they belonged to a past civilization, then no classic moldings are allowable, and even the carpenters in their ignorant use of the classic cyma reversa will have to devise something to take the place of the innocent ogee molding, in order to be consistent.

The profession of architecture as well as the vast thinking public have cause to be thankful that the schools of architecture are taking a stand for conservatism in teaching. If we were to allow ourselves to be carried away by the delusion that we might achieve fame by experimenting upon our students in the search for an original style of architecture, we would be infamous. We would be betraying a trust more sacred than any trust that is encountered in the practice of architecture. In practice an architect has the responsibility of disposing of his client's money, and of so using it that the community concerned will be enlightened and educated. His is a trust which should not be broken through this egotistical belief in one's power to revolutionize architecture. How much greater is the responsibility of the professors of architecture who have in their hands the futures of a group of young people?

Our duty toward our students is, first, to teach them to construct according to modern practices; second, to express themselves in black and white, in color, and in plastic materials; third, to habituate them to good methods of study in the art of designing. Add to this the various courses in history of architecture, history of art, etc., and we have in a nutshell an outline of a course which is conservative, and yet capable of the development of a perfectly safe amount of originality. It is not necessary

to go into the details of the many courses which are required of students in developing them in the three directions stated. It is sufficient to remark in passing that the essential policy for success in the development of a school is insistence upon a stiff entrance requirement and alertness in keeping to the standard set by the best architectural students in the world, — the French. Mr. Dean is mistaken in holding that because some of the recently returned students of the Paris school have the bad taste to erect French buildings in our cities, that, therefore, both European and American schools are at fault. Because one dog goes mad, it does not follow that all dogs should be muzzled and their mothers shot.

The ideal education of an architect is for him to first take an A. B. degree in some college or university where contact with professors and fellow-students in the so-called liberal studies will broaden his attitude toward the world. Then let him take his professional course of four or five years in a conservative school where good principles, not original theories, are taught. If he be a genius, his four years in a professional school cannot possibly repress him. His individuality will show through all the conservatism of his teaching. If he have not great talent, as is the case with many students of architecture, his conservative teaching will have been his professional life preserver. Not only he, but the community with which he is connected, will fervently thank the men who, believing in and loving originality and invention, still had the courage and common sense to teach traditions.

THE ARCHITECT.

PAPER READ BEFORE THE SECOND ANNUAL CONVENTION OF
THE ARCHITECTURAL LEAGUE OF AMERICA, AT CHICAGO.

BY FRANK LLOYD WRIGHT.

"Liberal sects do their work not by growing strong, but by making all others more liberal."

A VITAL point of difference between professional man and man of business is that money-making to the professional man should, by virtue of his assumption, be incidental; to the business man it is primary.

Money has its limitations; while it may buy quantity, there is something beyond it, and that is "quality."

When the practice of a profession touching the arts is assumed, certain obligations to the public concerning quality and beyond money-making are also assumed, and without their faithful discharge the professional man degenerates to the weakest type of social menial in the entire system, — an industrial parasite.

An architect practises a Fine Art as a profession, with the Commercial and the Scientific of his time as his technique. Men are his tools.

In this age of "quantity" there is a growing tendency on the part of the public to disregard the architect in favor of the plan-factory magnate or architectural broker, and there is consequent confusion in the mind of the young architect of to-day and of to-morrow as to the sound constitution of his ideal, if that ideal is to be consistent with the "success" every man of him hopes to achieve. This confusion exists, and naturally enough, because the topography of his field of action has changed. It has changed to such an extent that in the letter, at

least, the antique professional standard he may not recognize if he would. But the spirit of practice in the old field is still sound to the core, — the spirit that made of the professional man a champion of finer forces in the lives of his people.

The influence chiefly responsible for this change and most easily recognized is that of Science and its Commercialism.

The tremendous forward march of scientific attainment with attendant new forces and resource, cultivation of the head at cost to the heart, of mind and matter at the expense of the emotions; — which has nevertheless given to him new and masterful tools that demand of him their proper use, and have taken from him temporarily his power to so use them.

Because he has failed to realize and grasp his situation in its new bearings, he is not quite like his brother the artist, — a "thing afraid" of organization and its symbol the machine; but the architect, the master of creative effort whose province it was to make imperishable record of the noblest in the life of his race in his time, for the time being has been caught in the commercial rush and whirl, and hypnotized into trying to be the commercial himself. He has dragged his ancient monuments to the market places, tortured them with ribs of steel, twisted and unstrung them, set them up on pins, and perforated them until he has left them — not a rag!

He has degenerated to a fakir. A fakir who flatters thin business imbecility with "Art architecture shop fronts" worn in the fashion of the old "dickie," or panders to silly women his little artistic sweets. His "Art is upon the 'town' to be chucked beneath the chin by every passing gallant, coaxed within the drawing room of the period, and there betrayed as a proof of culture and refinement."

Do you wonder at the prestige of the plan factory when architecture has become a commodity, — "a thing" to be applied like a poultice or a porous plaster? Do you wonder that architecture becomes of less and less consequence to the public, and that the architect has small standing except as he measures his success by the volume of business he transacts?

Divorced from fine art, the architect is something yet to be classified, though he is tagged with a license in Illinois. So is the banana pedler and the chiropodist.

Do you wonder that his people demand that he be at least a good business man, a good salesman, as something that they can understand and appreciate? — when as for the commodity he is selling, it has been dead to them so long as to be unrecognizable, except by virtue of association with the dim past, and it is not quite respectable even yet to do without something of the sort.

That commodity is as dead to the salesman as to the buyer, and to the fact that the thing is more easily handled dead than alive, the salesman, captain of industry though he be, owes his existence.

In business it is in the stock pattern that fortunes are made: — so in architecture it is in the ready-made article that the money lies, altered to fit by any popular "sartorial artist" — the less alteration the greater the profit — and the architect.

The present generation of the successful architect has been submerged, overwhelmed by the commercialism

of his time. He has yielded to the confusion and feverish demand of the moment, and has become a high-grade salesman of a high-priced imported article. His duty to the public as professional man laid aside, if it was ever realized, and merely because the public was ignorant of its claim and willing to buy even if the paint came off and the features peeled.

What has been gained by his feverish haste to offer his art on the altar of commercial sacrifice has been quantity at expense to quality, — a general depreciation of architectural values and a corruption of the birthright of the "buyers."

In consequence, architecture to-day has not even commercial integrity; and the architect as he practises his profession is humiliated and craven.

Robbed by his own cowardice and mediocrity of his former commanding position in the arts, he hesitates between stalking his victim outright or working wires — otherwise his friends — for the "job," as his opportunity is now styled.

He joins the club and poses, or hanging to the coat-tails of his friends he teases for the "jobs" they may carry in their pockets, his mouth sticky and his hands dirty, pulling and working for "more." Then he starves in the lower ranks of a doubtful aristocracy unless he comes by influence in other than architectural ways, — by inheritance, by marriage, or by politics. Does a sale of property appear in a trade journal, immediately the owner is besieged by ten "first-class architects," suing for the privilege of submitting "samples free of charge," assuring the owner, meanwhile, that he would be granting a personal favor in permitting them to do so, and if the samples were not what he wanted they would love each other none the less. Or his friend drops in shortly after the owner decides to build and incidentally mentions so and so as a good fellow and a winning architect. His wife, perhaps, has had influence brought to bear before he gets home, and while against the principles of the architect to work for nothing, yet the combination is of such a friendly nature as to form a special case, and "sketches," in this instance, in place of "samples" are finally submitted to all intents and purposes as before, but a little higher in the social scale, inasmuch as the method is less rude and abrupt.

The latest development is the hiring of a professional promoter by the year to drum up "trade" — mine and counter-mine the social system with pitfalls for the unwary to be ensnared for the practice of his principal. And talk to the best of him concerning "professional" advertising, making capital of himself in subtle telling ways — poor devil, the naiveté of some of him would wring the tear of pity from commerce herself. How many architects would live (and they are just the number that *should* live) if they depended upon the work that came to them because of intelligent, critical appreciation of actual qualifications or work performed? There would be a good many, but probably about 7 per cent. of the profession. There is usually the maneuver, the pull, sometimes methods more open, but no more weak and shameful.

Because this matter of architecture itself has become of little moment to the average client, architecture as a Fine Art is really out of it, and for the present architec-

ture as a commodity is a case of friendly favor and interference, or a matter of "fashion."

The fact that all this has become so generally accepted as good form is proof of the architect's danger and the damnable weakness of his position.

Another feature of his present plight is that not wholly respecting himself (how can he?) he is apt to be a hypersensitive individual, and like other unfortunates who depend upon pre-eminence of personality to get in the way of "the choosers" he is interested in pretty much everything as long as he counts one, and at that No. 1; none of his bloom or luster is to be rubbed off by contact. So, concerted effort in matters touching the welfare of his profession is rare among him.

Perhaps this is in the nature of the proposition.

There are intelligent architects who argue that only the selfish few give value to art, the high lights only give value to the pattern of the fabric; but I believe it is because of warp and woof, undertone and motive, that he has any value as a "high light," and that type of individualism is one of the superstitions he must shed before he comes to his own.

The architect, so-called to-day, is struggling in a general depression in the level of his art, owing to the unknown character of the country patiently awaiting his exploration, prophesied by the past, but of which no map may yet be made, and of which no chart has been provided by the schools.

He is complacent inanity personified, and counts not at all; or blinded by the baser elements of commerce, choked by greed, goaded by ambition for "success" of the current type, the feverish unrest, common to false ideals, racks his bones and wastes his substance until he finally settles, dazed and empty, in his muddy tracks, which amounts, I suppose, to giving the people what they want.

For the generalization of the situation, then, the architect is rapidly becoming accepted as a middle-man, or broker, with the business instinct and ability, but who can have no business integrity because of the nature of his self-imposed occupation. He sells the public ready-made imported architecture that he himself buys in a "job lot" of unfortunates in a "home" which he establishes to protect them from a condition which he himself has developed and fostered. This architecture is applied to his client's condition as a poultice or porous plaster would be applied to his aching back, and is accepted with a clamor for "more" through lack of acquaintance with the real thing, lack of an ideal and of educational force in the profession itself. Meanwhile the younger aspirant for better things is either assimilated by the winners, plucked and shoved behind the scenes with the unfortunate, or settles down to give the people what they want, which simply means producing more of the type the plan factory fashions.

An example of a once noble profession prostituted by "commercial knight of untiring industry," abandoned to her fate by the "architect" (in quotation marks), who shrugs his shoulders, looks aghast, and contributes innocuous expectation of her ability "to pull out" (and pull him out too) to the general blight.

And why this net-work of cross purposes?

Is it because the architect is now confronted with a

condition which they say demands a combination of two of him and a corps of trained experts, where before one was absolute?

Is it because he is now in a position that demands that an intricate commercial machine be perfected to carry into effect an idea?

Or is it because architecture is a great thing in small hands, and ideals, noble theories, if you will, "the rails of the track on which the car of Progress runs" have fallen to disrepute?

"Give me a great thought," cried the dying Herder, "that I may refresh myself with it."

He was of the stuff from which an *architect* is made.

The regeneration of architecture does not lie in the hands of classicist, or fashion-monger of the East nor of the West.

Their work is almost written at its length, and no spark of life and but a shroud of artistic respectability will cling to it half a century hence.

It is but archæological dry bones bleaching in the sun!

America will regard it as crude, — Chicago, even now, regards her County Courthouse as something weak and servile, an insult to the people who entrusted to chosen ones the fruit of honest toil and were betrayed to perpetuate the degenerate art of a degenerate people.

The American nation has a heart and backbone of its own, and is rapidly forming a mind of its own. It has not yet been taught self-expression except in the matter of dollars and cents, and recently of war. Presently Light, Grace, and Ethics, true to as virile an individuality as history has known, will come as naturally to her as the breath of life that is already hers; and then, oh, ye Stuffed Prophets of Plethoric "Success"! will she look with pride upon the time that you bedizened her with borrowed finery; pierced her ears for borrowed ornaments; taught her to speak with a lisp, and mince in her gait? No! Your very success was your undoing and her disgrace.

In her new code no one man will be entrusted with the amount of work that occasioned the "plan factory." As no Rockefeller may rise to a legitimate point of vantage that would justify the control of such a vast share of the earth's resources, *how unspeakably vulgar and illegitimate will it be for one man to undertake in the Fine Arts more than he can characterize in noble fashion as a work of Art!*

The plan factory is the product of a raw commercial state, perhaps a necessary evil to be passed through as we pass through the dark before day.

Perhaps the epidemic of Renaissance, French, Dutch, and English, that encumbers the land was a contagious malady such as little children bring from school. Soonest over, soonest mended.

It is argued that we are witnessing the same development in architecture that we see is legitimate enough as a means to an end in trade, as the department store and the trust. But it is not in architecture a development, but a *reflection*, or reflex action, that is passing but causing painful confusion. It is making of art a net-work of cross purposes, but temporarily.

Art will reign as long as life, and greater than ever her prestige, when the harmony between commerce, science, and art is better understood.

It is this Harmony, this Commercialism, that the younger architect should strive to understand and appreciate, for it is the measure of his technique in his new field; but he should strive to understand it as a "master," not as a "huckster"; to poetize and deify it as an instrument in his hands.

He should help his lame, halt, and blind profession again to its place by respecting his art and respecting himself; by making the solution of problems that come fairly his way such as will compel the recognition that there is no commercial dignity without that kind of art; that will make the man of business see that a Greek temple made over to trade is an unhallowed joke, and that he is the butt when genuine dignity and beauty might be his for less money; that will make the householder realize that if he would live in a Louis XV. environment, he is but a step removed from the savage, with a ring in his nose; and make it felt that architecture is not a matter of the scene painting of periods, nor a mere matter of scene painting in any sense whatever.

Give back the slogan "a good copy is better than a poor original" to those whose desire for "success" out-measured their capacity to perform and who framed it in self-defense.

"A poor thing but mine own" is better stuff for men when coupled with reverence and honesty, and carries the fundamental principle of harmonious independence graven over the gate of the new country promised of old.

The architect should help the people to feel that architecture is a destroyer of vulgarity, sham, and pretense, a benefactor of tired nerves and jaded souls, an educator in the higher ideals and better purposes of yesterday, to-day, and to-morrow.

Such an art only is characteristic of the better phase of commercialism itself, and is true to American independence, America's hatred of cant, hypocrisy, and base imitation.

When once Americans are taught in terms of building construction the principles so dear to them at their fire-sides, the architect will have arrived.

But his own education is a matter of the greatest concern. We all catch a glimpse of the magnificent awaiting him, but how to prepare him is a more difficult matter.

It is for a higher law and more freedom in his architectural school that we plead, not anarchy — a deeper sense of the significance to his Art of Nature, manly independence, and vigorous imagination, a truer reverence for his precedent. He should learn method of attack; have cultivated in him the quality that gets at an architectural proposition from the inside outward, for and by itself. He should be a thinking quantity when he leaves school, standing on his own legs, — such as they are, — with ears and eyes wide open, receptive, eager, and enthusiastic; his faculties sharpened by metaphysical drill, his heart wide open to beauty, whether of a specific brand or no; and a *worker* first, last, and all the time a *worker*; his mind alive to opportunity, knowing the direction in which it lies, gauging his own fitness in relation to it; far-sighted enough to decline the opportunity that he was unfitted to undertake if it should come to him (and many such do come to all architects); coura-

geous enough to decline it and wait for one "his size." And when it came he would make it count without making his client pay too large for a share of his education in the field.

He would gain experience and strength, and build up solidly, if slowly; and the respect and confidence would in time be his that would make his personality a power for the architectural good of his country.

His experience is to be gained only by solving problems for and by themselves.

Advice never built a character worth the name, though advice is good.

So an architect may practise architecture extensively with book and precedent, and die without experience, without a character.

The man who has worked out the salvation of a summer cottage on his merits, held the conditions in rational solution, and expressed them in terms of wood and plaster, with beauty germane to the proposition, has more valuable experience than he who builds a city with the pomp and circumstance of established forms.

The education of the architect should commence when he is two days old — "three days is too much" — and continue until he passes beyond, leaving his experiments by the wayside to serve his profession as warning signs or guide-posts.

The kindergarten circle of sympathetic discernment should be drawn about him when he is born, and he should be brought into contact with Nature by prophet and seer until abiding sympathy with her is his. He should be a true child of hers, in touch with her moods, discerning her principles and harmonies until his soul overflows with love of Nature in the highest, and his mind is stored with a technical knowledge of her forms and processes.

Braced and stayed by that, he should move into the thick of civilization to study man and his methods in the things that are his and the ways thereof, taking his averages and unraveling seeming inconsistencies, shoulder to shoulder with his fellow-men as one with them.

Meanwhile, as his discipline, he should acquire the technical skill of the mill, forge, and try-pit of commerce in the light of science; study the beauty of the world as created by the hand of man, as his birthright and his advantage; finding his passion and delight in various initial steps of composition with the encouraging guidance of a catholic-minded, Nature-wise, and loving master.

In short, a master that would make the distinction between Fine Art and Fine Artisanry plain.

Now he is taught certain architectural phraseology of form and color dubbed "grammar" by his professors, and much foreign technique.

If teaching him that minutes and modules of the architraves and cornice of one type in certain measure make Greek, and of another type in combination make Roman, and when they corrode each other the result is "Renaissance" — there he is taught "grammar."

I imagine it to be a more difficult matter to teach him the "grammar" of Goth and Moore; but architecture has no business primarily with this "grammar," which, at its best, I suppose, might mean putting the architectural together correctly, but as taught means put-

ting the architectural together as predetermined by fashion of previous races and conditions.

So the young student is eternally damned by the dogmas of Vignola and Vitruvius, provided with a fine repertoire of stock phrases as architectural capital and technique enough to make them go if he is let alone and conditions are favorable, which he never is and they never are.

He comes to think these fine phrases and this technique are architecture, and sells both in judicious mixture to the "buyers" as such with the circumstance of the "scholar" and the "classical," and he would be shocked if told that he is a swindler.

He is sent out a callow, complacent fledgling, sure of his precedent, afraid of little but failure to "succeed," puffed up with architectural "Excelsior," and wadded with "deafening," to become soaked and sodden in the field, hopelessly out of shape.

The architect primarily should have something of his own to say, or keep silence.

There are more legitimate fields of action for him than the field of architecture.

If he has that something to say in noble form, gracious line, and living color, each expression will have a "grammar" of its own, using the term in its best sense, and will speak the universal language of Beauty in no circumscribed series of set architectural phrase as used by people in other times, although a language in harmony with elemental laws to be deduced from the beautiful of all peoples in all time.

This elemental law and order of the beautiful is as much more profound than the accepted grammatical of phrase in architecture as Nature is deeper than Fashion.

Let the young student add to his wisdom the strength and wisdom of past ages; that is his advantage. *But let him live his own life, nor mistake for the Spirit the Letter.*

I would see him relieved of the unnatural, educational incubus that sowed the seed of the plan factory and nurtured the false ideals that enable it to exist.

I would see him relieved of architectural lockjaw, not by prying the set teeth of his Art apart with a crow-bar, nor by cracking its jaws with a sledge-hammer, but by a realization that life was given the architect that architecture may grow and expand naturally as a noble Fine Art and as becomes a free-hearted, vigorous young people.

It may be that the very cosmopolitan nature of our nation will prevent a narrow confirmation of any one type.

I hope that we are destined to greater variety in unity than has yet existed in the art of a great people.

The very strength of individuality developed in a free nation, and the richness of our inheritance, will find expression in more diverse and splendid ways than could be expected of a more narrowly nurtured race. Yet it will find expression in an art that is indigenous and characteristic as an architecture measured by the laws of Fine Art, the hardy grace of the wild flower, perhaps, rather than the cultivated richness of the rose, but a further contribution to the art of the world, — not a servile extraction!

The architect has a hard road to travel and far to go.

He should know what he is to encounter in the field,

and be trained to meet it by men who have faced it in all its ugly significance with unconquerable soul and clear vision.

He should understand that to go into the field penniless with a family to support means the ultimate addition of one more craven to the ranks, unless some chance saves him, or his fortitude is of the stuff that will see his wife and children suffer for ideals that may seem ridiculous, and are to the average mind incomprehensible.

If he goes single-handed he must be content to walk behind, to work and wait.

The work to be done by the young architect entering the lists would better be done by him whose board and lodging is assured for life, and whose communication with his base of supplies is not apt to be cut off.

He is going into a country almost abandoned to the enemy.

Yet the hardy pioneer who takes his architectural life in hand and fares boldly forth in quest of his ideal, not scorning hardtack for food nor a plank for a bed,—

“Withal a soul like the bird,
Who, pausing in her flight
Awhile on boughs too slight,
Feels them give way beneath her and yet sings,
Knowing that she hath wings.” —

is perhaps the stuff from which the missionary we need is to come. The spirit that conquered Western wilds and turned them to fallow fields transmuted to the realm of Art, a boy with the heart of a king; the scent of the pine woods deep in his nostrils, sweetness and light in his soul — the erudition of the world at his fingers' ends. Will the flickering art spirit of this age produce him? If he is the stuff that architects are made of, he is not to be discouraged by limitations.

The limitations within which an artist works do grind him, and sometimes seem insurmountable; yet without these very limitations there is no art. They are at once his problems and his best friends, — his salvation in disguise.

In the arts every problem carries within, its own solution, and the only way yet discovered to reach it is a very painstaking way — to sympathetically look within the thing itself, to proceed to analyze and sift it, to extract its own consistent and essential beauty, which means its *common sense truthfully idealized*.

That is the heart of the poetry that lives in architecture.

That is what they should teach the young architect in the schools, beginning early. But the schools will have to be taught before they will ever teach him.

His scientific possibilities and demands have outrun his hand-made Art as planned for him in the school curriculum. He is without lettered precedent as he stands to-day on the threshold of great development in the industrial direction of the world.

A highly organized, complex condition confronts him.

He will understand it, learn the secret of its correspondencies and their harmonies, and work with them, not against them. For his Art is of Life itself; it will endure.

Life is preparing the stuff to satisfy the coming demand; and the architect will know the capacities of

modern methods, processes, and machines, and become their master. He will sense the significance to his art of the new materials that are his, of which steel is but one.

He will show in his work that he has been emancipated from the meager unit established by brick arch and stone lintel, and his imagination will transfigure to new beauty his primitive art.

He will realize that the narrow limitations of structure outlined in his precedents are too mean and small to be longer useful or binding, and that he is comparatively a free man to clothe new structural conditions in the living flesh of virile imagination.

He will write large, in beautiful character, the song of steel and steam: —

“Lord, thou hast made this world below the shadow of a dream,
And taught by time, I take it so, exceptin' always steam.”

Romance! Those first-class passengers, they like it very well,

Printed and bound in little books, but why don't poets tell?
I'm sick of all their quirks and turns, the loves and doves they dream.

Lord! Send a man like Bobbie Burns to sing the song of steam,

To match with Scotia's noblest speech, yon orchestra sublime,
Whereto — uplifted like the Just — the tail rods mark the time.

The crank-throws give the double bass, the feed-pump sobs and heaves;

And now the main eccentrics start their quarrel on the sheaves.

Her time — her own appointed time — the rocking link-head bides,

Till — hear that note — the rods return, whings glimmering through the guides.

They're all away, true beat, full power, the clanging chorus goes

Clear to the tunnel where they sit, my purring dynamos.

Interdependence absolute, foreseen, ordained, decreed,

To work ye'll note at any tilt, on any rate of speed,

From skylight lift to furnace bars, backed, bolted, braced, and stayed,

And singing like the morning stars for joy that they are made;

While, out o' touch of vanity, the sweating thrust-block says:

“Not unto us the praise, or man — not unto us the praise.

Now all together, hear them lift their lessons, theirs and mine:

Law, Order, Duty, and Restraint, Obedience, Discipline.

Mill, forge, and try-pit taught them that when roaring they arose,

And th' while I wonder if a soul was gied them wi' the blows.

Oh, for a man to weld it then in one trip-hammer strain,

Till even first-class passengers could tell the meanin' plain.”

The architect will weld that strain and build that song in noble line and form.

He will write that record for all time.

He may not last to “judge her line or take her curve,” but he may say that he, too, has lived and worked; whether he has done well or ill, he will have worked as a man and given a shoulder to his fellows climbing after.

Selected Miscellany.

NOTES FROM NEW YORK.

As usual, the influence of a presidential year is making itself felt among the building and kindred trades. From now until the first of next year it is not likely that much

and will certainly do much to provoke discussion of the subject, which is always a long step towards the solution of a problem. In most cases the criticisms were just, and many flaws made apparent in both plans. Coming as it does just after the award of the Tenement House Commission of prizes in a model competition, the result of which was announced in *THE BRICKBUILDER*, the discussion was very timely and entertaining, and the end thereof is not yet in sight.

A *fin-de-siècle* institution, of which we are justly proud, is the establishment of small parks in the crowded parts of the city. St. John's Park, which was designed by Carrere & Hastings, and which is a little gem, looks now as though it were here to stay, as the newness has worn off, the shrubs and trees have developed into luxuriant growth, and the hard granite walls of the shelter are overgrown with beautiful clinging vines. In Hamilton Fish Park, which has just been opened, a larger amount of space has been left for children's playground than is usual in such cases. In too many parks the lawns are reserved as beauty spots to be gazed upon with awe, but not to be desecrated



HOUSE AT GERMANTOWN, PA.
Lawrence Visscher Boyd, Architect.

work of importance will be undertaken, although there is no diminution in the wonderful activity in regard to cottage building in the suburbs and moderate-priced apartments in the city.

The *Record and Guide* has for several weeks past contained a series of interesting and rather acrimonious letters in regard to model tenement buildings, a subject which is agitating the architects and reformers of New York at present. The participants in the discussion are a "reform" architect, who has made a study of the subject in conjunction with the Charity Organization Society, and a practical investor and builder, who has studied the problem and built a high class of tenements in the city for twenty years. Their favorite plans were published side by side



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by the feet of children. Larger graveled and asphalted areas for playground and only enough of grass, tree, and shrub to meet the æsthetic requirements are what is wanted if the parks are to serve their proper functions.

I would like particularly to call the attention of the readers of *THE BRICKBUILDER* to a practice which is becoming popular among architects, even among those who stand at the head of the profession, and which upon serious consideration will surely be found very unjust and inexcusable. I refer to the custom of compelling contractors to estimate upon large and important jobs from plans drawn to $\frac{1}{8}$ scale, and with no dimensions or thicknesses of walls figured. My attention was called to this by a contractor who was



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asked to estimate upon the general contract for a building which will cost \$3,000,000, and where the plans were as stated above. He said he positively could not tell whether the brick walls were intended to be 20 or 24 ins.

tract as lowest bidder, having figured on walls of the smaller dimension, if he insisted on building them thus instead of thicker, to suit the architect? Another injustice often added to this is that the plans given contrac-



BOTANICAL MUSEUM, BRONX PARK, NEW YORK.
Architectural terra-cotta executed by the New York Architectural Terra-Cotta Company.
R. W. Gibson, Architect.

thick, so, of course, to protect himself, he figured on the larger dimension, which adds perhaps \$5,000 to the total, and which the owner has to stand. Would not a contractor be upheld by the law if he were awarded the con-

tors for estimating are blue prints, *not colored*. I know of a case where a carpenter's bid was thrown out because he had included in his bid a lot of terra-cotta work, which he had no means of knowing was not to be wood. I hope that architects will give this matter some consideration.

Boring & Tilton have been awarded the competition for the Joseph Tome Industrial School buildings, to be erected at Port Deposit, Md., at a cost of about \$1,000,000.

NOTES FROM CHICAGO.

Shepley, Rutan & Coolidge have been selected to design the new Carnegie Library, to cost \$50,000, at Sedalia, Mo.

The firm of Long & Nothnagel, architects, has been dissolved. Mr. John T. Long retiring, and Mr. C. W. Nothnagel continuing at 185 Dearborn Street.

S. A. Treat and A. K. Adler, son of the late Dankmar Adler, have associated under the firm name of Treat & Adler.

The Illinois Board of Examiners of architects have revoked the license of Benjamin H. Eden, of Alton, Ill., for placing his seal on the plans of several unlicensed architects, — these acts coming under the head of "dishonest practices" within the meaning of the license law.

The trustees of the sanitary district, of Chicago, through Franklin McVeagh, president of the Municipal Art League, have appointed P. B. Wight and Martin Roche to assist the engineers in designing the approaches, etc., for six new bridges to span the Chicago River. Those at Canal, State, and Randolph Streets will be erected first, with others to follow at Harrison, Polk, Eighteenth, and Main Streets.



SCULPTOR AT WORK, AT WORKS OF PERTH AMBOY TERRA-COTTA COMPANY, ON STATUE OF ST. AUGUSTINE, ST. AUGUSTINE R. C. CHURCH, PITTSBURGH, PA.
Rutan & Russell, Architects.



TRIBUNE BUILDING, MINNEAPOLIS, MINN.

Entire front of glazed brick, furnished by the Tiffany Enameled Brick Company, and glazed terra-cotta furnished by the American Terra-Cotta and Ceramic Company.
Frederick Kees, Architect.

NOTES FROM ST. LOUIS.

The prevailing high prices of building materials contribute largely to the continued dulness in building circles. Many important improvements which the architects have been working on have been held up or abandoned, and there seems to be little encouragement in the outlook for the immediate future.

The decrease in the value of buildings for which permits were issued during the month of April was 80 per cent. below that for the corresponding month, last year.

The question of a new City Hospital has been taken up again by the municipal assembly, with a hope that they



WINDOW HEAD, HOTEL FOR WHITE ESTATE, NEW YORK CITY.

Atlantic Terra-Cotta Company, makers.
Barney & Chapman, Architects.

may be able to find a sufficient fund with which to commence the building.

Considerable interest was taken in the annual exhibition of the St. Louis Architectural Club, held at the



WINDOW CROWN, APARTMENT HOUSE, NEW YORK CITY.
The New Jersey Terra-Cotta Company, makers.

Museum of Fine Arts, from April 12 to April 22, inclusive, which afforded an unusual opportunity for the laymen to study the work of some of the leading architects and decorators of our own country as well as of Europe. As the exhibit was practically the same as that of the T Square Club and the Chicago Architectural Club, it has been thoroughly described heretofore. Of the local portion of the exhibit, the drawings submitted in the competitions for the buildings of the Washington University and for the St. Louis Trust Company were perhaps the most important.

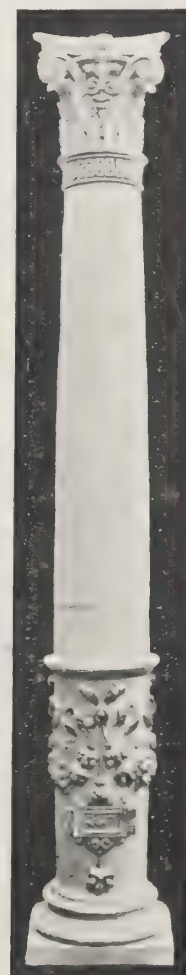
Mr. William B. Ittner, the architect of the school board, will spend his vacation in Europe, visiting the Exposition before returning.

IN GENERAL.

The following named architects have been appointed to represent the United States at the Fifth International Congress of architects, to be held in Paris at the end of July: Robert S. Peabody and T. M. Clark, Boston; Prof. William R. Ware, New York; Albert Kelsey, Philadelphia; and W. L. B. Jenney of Chicago and George O. Totten of Washington, who were appointed at the Brussels Congress, three years ago, as honorary members of the permanent committee for the organization of the present congress.

R. Guastavino Company, in order to better accommodate their New York business, have leased, for office purposes, the house No. 49 East 19th Street.

Charles Bacon, Boston representa-



WINDOW COLUMN,
APARTMENT,
NEW YORK CITY.
New Jersey Terra-Cotta Company, makers.



MERCANTILE BUILDING, BROOKLYN, N. Y.

Above first story the building is of light red terra-cotta, executed by the Excelsior Terra-Cotta Company.
Francis H. Kimball, Architect.

tive for the Celadon Terra-cotta Company, Ltd., reports the following new contracts for roofing tile: Southern gate house, Spot Pond, Mass., Shepley, Rutan & Coolidge, architects; residence at Weston, Mass., J. E. Chandler, architect. As representative of Sayre & Fisher Company, Mr. Bacon reports contracts for: Two new residences, Fenway, Boston, Peabody & Stearns, architects; building for Lawrence Estate, Boston, A. H. Vinal, architect; pumping station, Spot Pond, Mass., Shepley, Rutan & Coolidge, architects; engine house, Boston, J. A. Fox, architect; residence, Fenway, Boston, W. T. Sears, architect.

The Atlantic Terra-Cotta Company are now supplying the terra-cotta on the following contracts: Ditson Building, Boston, Mass., Kendall, Taylor & Stevens,



BALUSTRADE.

Conkling-Armstrong Terra-Cotta Company, makers.
C. W. Bolton, Architect.

architects; Apartment House, Morningside Avenue, New York City, Harry B. Mulliken, architect; Bryant Park Studio Building, New York City, Charles A. Rich, architect; summer residence, William K. Vanderbilt, Long Island, Richard H. Hunt, architect; school building, New Haven, Conn., Brown & Von Beren, architects; Title & Trust Company Building, Connellsville, Pa., James T. Steen, architect; Carlyle Chambers, New York City, Herts & Tallant, architects; office building for Girard Estate, Philadelphia, Pa., J. H. Windrim, architect; office building, Atlantic Mutual Insurance Company, New York City, Clinton & Russell, architects.

Sayre and Fisher Company have recently closed contracts to furnish all the front brick for the Atlantic Mutual Insurance Company's new building, located at corner of Wall and William Streets; also all the front brick for the Mutual Life Insurance Company's

new building, running from Liberty to Cedar, between William and Nassau Streets; also the large Durland Riding Academy at 66th Street and Central Park, West.

The two buildings mentioned first will require, approximately, 1,000,000 of semi-glazed white brick; the



KEY AND ARCHIVOLT OF AN ENTRANCE.

Northwestern Terra-Cotta Company, makers.
Stroch, Brown & German, Architects.

academy will take 150,000 old-gold brick. This company has done a good business since the first of the year, notwithstanding the general falling off in building operations.

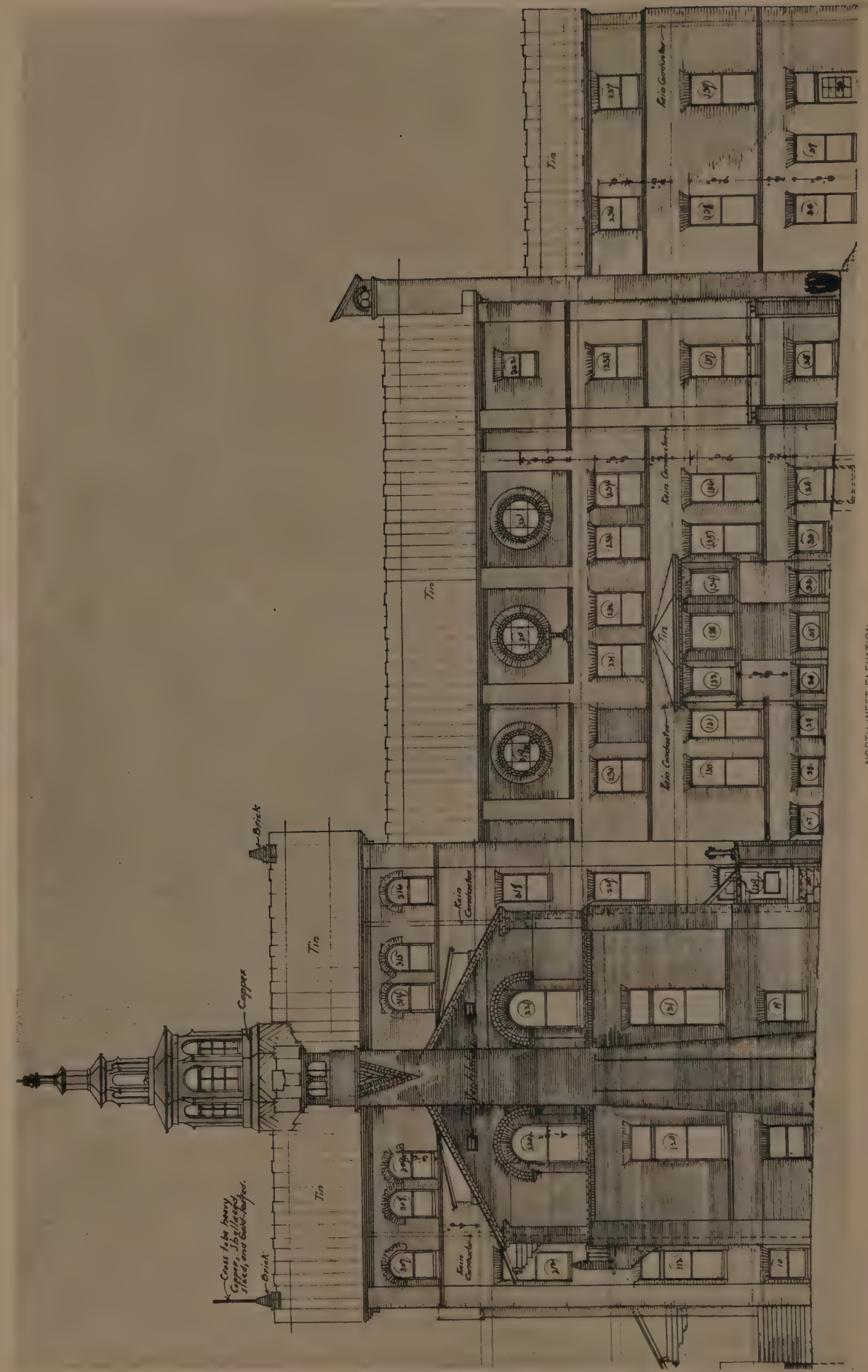
Edward R. Diggs & Co., Baltimore, general agents for building material supplies, have moved their principal offices to Washington, D. C., same being located at 1216 G Street, N. W. Mr. Diggs is a resident of Baltimore, and the firm will still continue an office there, but a rapidly increasing business has made it necessary to establish headquarters in Washington.



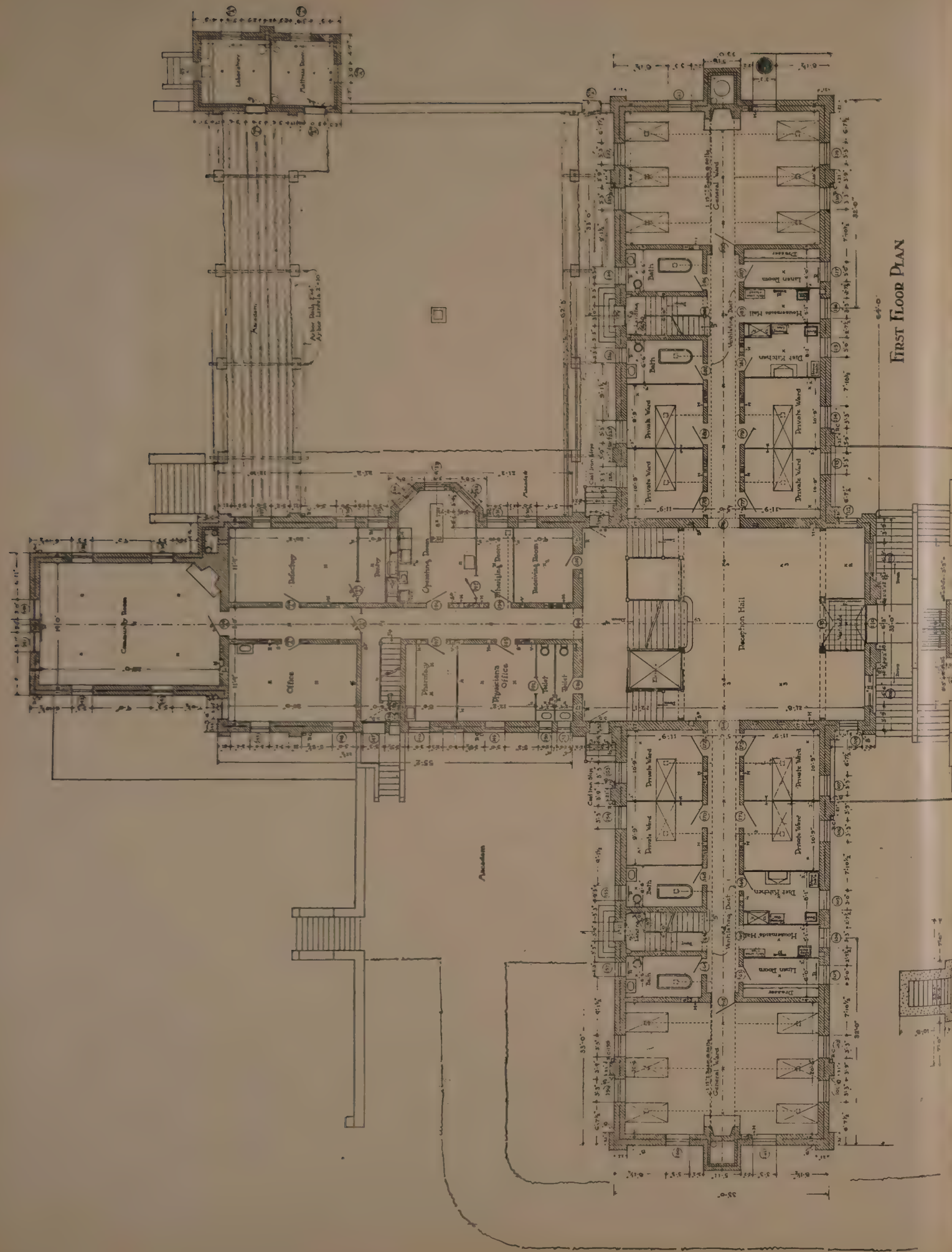
NORTH EAST ELEVATION.



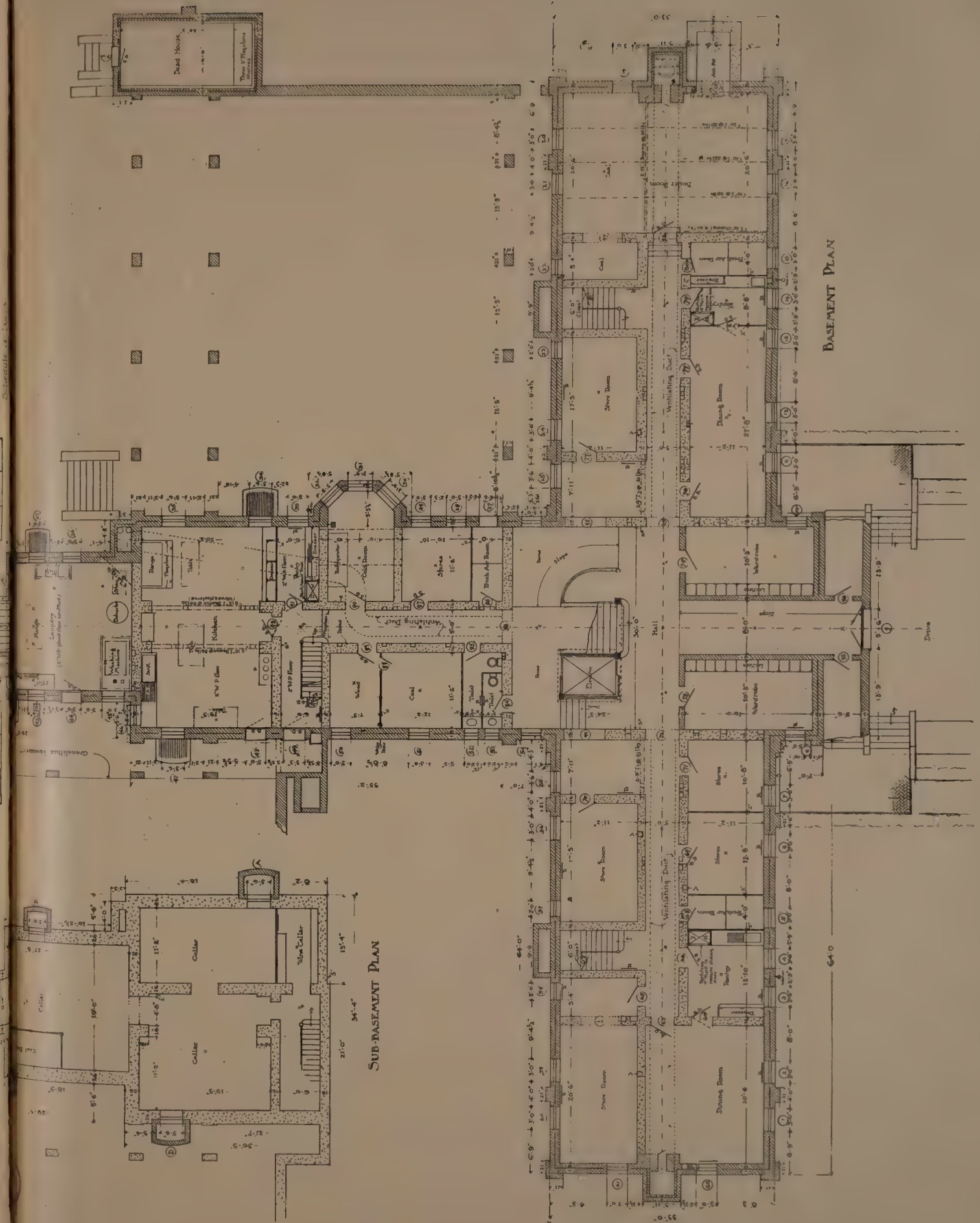
SECOND FLOOR PLAN.



NORTH WEST ELEVATION.
MEMORIAL HOSPITAL AND SANATORIUM, MONTAGUE CITY, MASS.

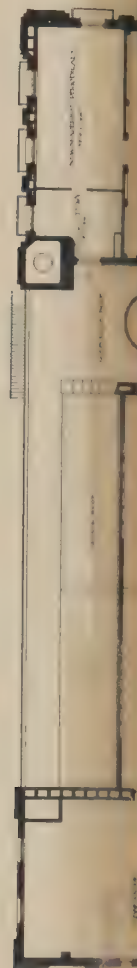
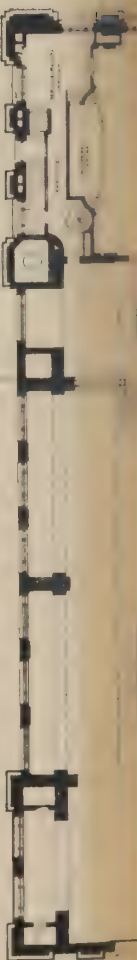
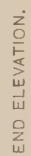
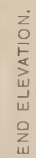


FIRST FLOOR PLAN



SUB-BASEMENT PLAN

BASEMENT PLAN

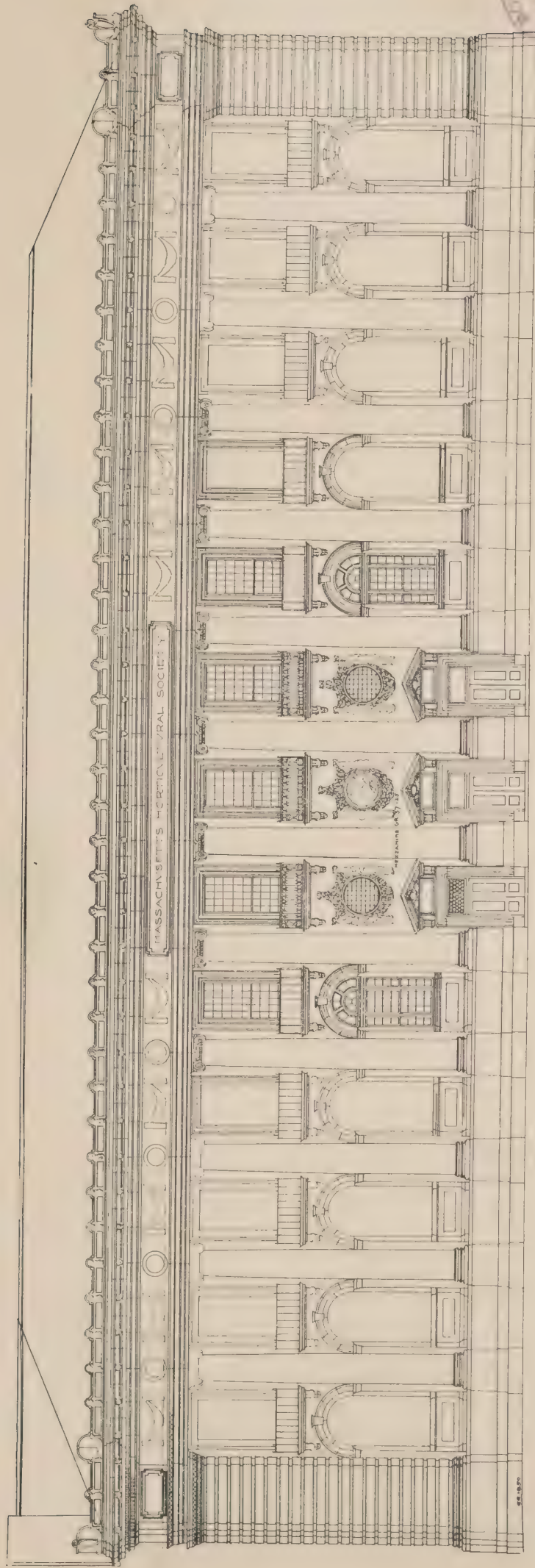




FIRST FLOOR.



SECOND FLOOR.

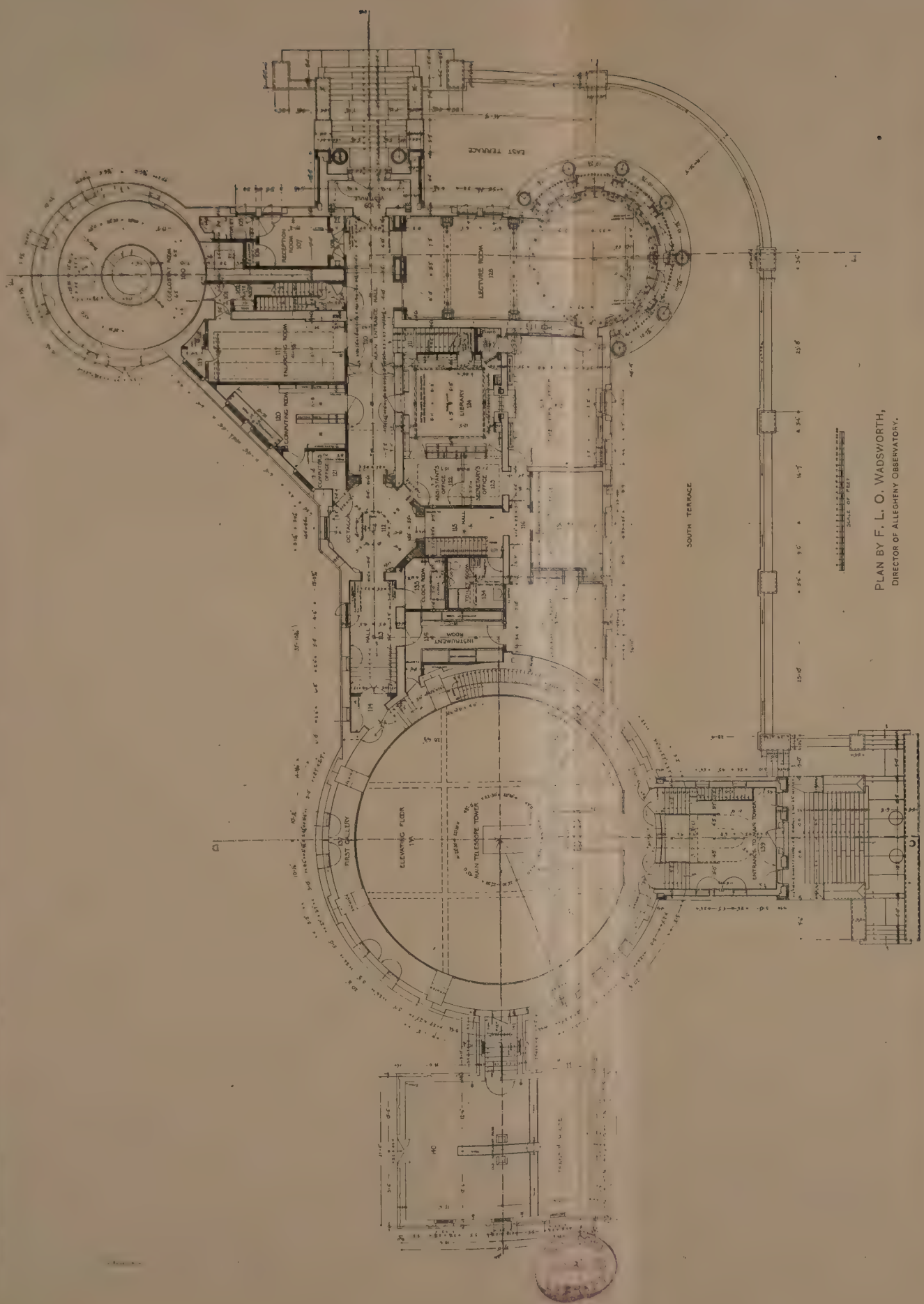
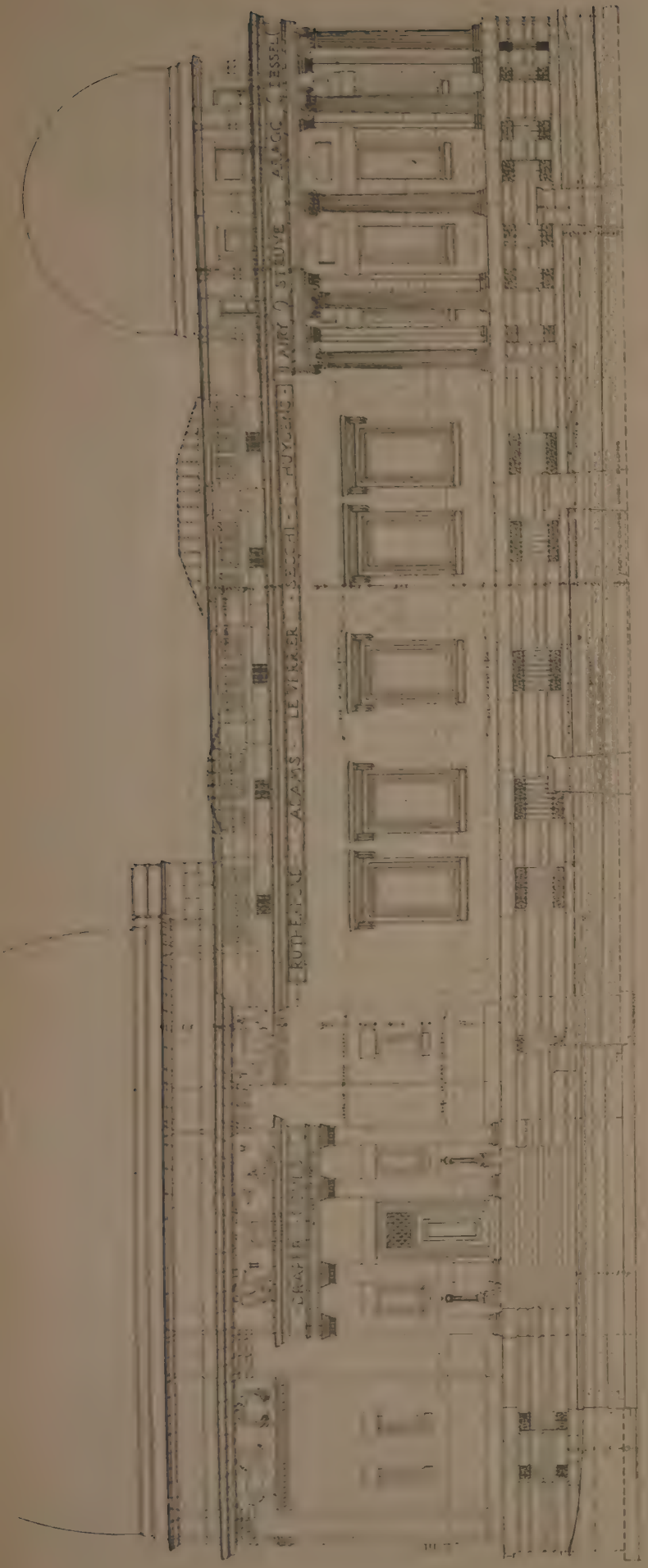


FRONT ELEVATION.

BUILDING FOR THE HORTICULTURAL SOCIETY, BOSTON, MASS.
WHEELWRIGHT & HAVEN, ARCHITECTS.

65.13.27





ALLEGHENY OBSERVATORY, ALLEGHENY CITY, PA.



GREAT HALL. "GEORGIAN COURT." LAKEWOOD, N. J.
 BRUIE PECK, ARCHTCT.





MORNING ROOM, "GEORGIAN COURT," LAKEWOOD, N. J.
BRUCE PRICE ARCHITECT.



DINING ROOM, "GEORGIAN COURT, LAKEWOOD, N. J."
BRUCE PRICE, ARCHITECT.



MAIN ENTRANCE. "GEORGIAN COURT," LAKEWOOD N. J.
BRUCE PRICE ARCHITECT.



STABLES, "GEORGIAN COURT," LAKEWOOD, N. J.



REAR VIEW.

"GEORGIAN COURT," RESIDENCE GEORGE J. GOULD, ESQ., LAKEWOOD, N. J.

BRUCE PRICE, ARCHT. N. J.



LIBRARY GEORGIAN COURT LAKEWOOD N. J.
BRUCE PAULE ARCHT.

THE BRICKBUILDER,
JULY,
1900.



INTERIOR OF THE CHURCH AT ASSISI, ITALY.



THE BRICKBUILDER.

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Architectural Faience	II	Clay Chemicals	IV
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Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

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GOOD MECHANICS.

THERE is a disposition on the part of most of us to give every well-meaning mechanic a fair chance; and when the architect exercises his undoubted prerogative in restricting the competition for a piece of work to those who have done his work in the past, it often gives rise to a feeling of unfairness, which at first thought seems justified. And yet there is another way of looking at this question. In conversation a short time since with one of our most prominent builders, an architect of more than national reputation was being discussed, and the secrets of his success were being analyzed. The statement was made that he owed a very considerable element of his success to the fact that he resolutely refused to allow his clients to employ any but the very best builders, with the consequence that his buildings were invariably well built, were completed on time, and stood the test of wear. This is something that the beginner in architecture often fails to realize, and the temptation to meet the desires of an owner by allowing an inferior contractor to bid, or by accepting figures from an unknown mechanic, is often the first step towards a ruined reputation. It is not the province of the architect to guarantee or be responsible for the quality of work which the builder does. At the same time, the community judges the architect by his completed buildings, and if he is so unfortunate as to have his work executed by careless or ignorant workmen, his reputation, though he may

be entirely blameless, is sure to suffer. So that it is decidedly to the advantage of the architect that a most rigid selection should be made of the parties to whom he is to entrust work. It is equally to the advantage of the builders themselves that the best workmanship should win the best rewards. Every builder wants all he can get honestly, and yet, also, we fancy that any builder, however inefficient in his methods, would prefer to owe his successes to the intrinsic quality of his work, rather than to the mere chance permission or selection on the part of an indifferent architect or owner. If it were more difficult for poor mechanics to get work to do, there would be a higher grade of mechanics as a natural result. And if the obtaining of work were strictly conditional upon a good record in the past, that would be one of the highest incentives for the production of the very best quality of work under all circumstances.

NON-FIRE-PROOF TENEMENTS.

IN our May issue we referred to a bill which had passed to a third reading before the Massachusetts Legislature, so drawn as to permit of four-story non-fire-proof tenement or apartment houses being erected within city limits. We regret to say that this act has been finally passed by the legislature and signed by the governor, and that the opposition represented by the Master Builders' Association and the Boston Society of Architects was of no avail as against the urgings of the Real Estate Exchange. Massachusetts has on the whole been singularly favored in the matter of legislative building enactments. Her laws have been generally well chosen, and have shown a tendency to encourage the best work, to reduce the opportunities for dishonest constructions, and to recognize the opinions of the most conservative and the most advanced thinkers on building construction and science. This is, as nearly as we can recall, the first instance in which purely financial considerations have been allowed to over-ride what is recognized to be the essential condition of security and good building. The act is thoroughly reprehensible. The fact that a few real estate owners claim themselves aggrieved because they could not under the old laws develop their properties as they pleased, is the least of reasons which ought to have weighed with sensible legislators in considering a proposition to throw down the bars. This measure is a step twenty-five years backwards, and one which will be sure to give occasion for much regret in the future, unless a succeeding legislature is sufficiently fortunate to be able to reconsider this unwise enactment, and provide for building hereafter nothing but fire-proof structures in the heart of this great city.

BRICKBUILDER COMPETITION, III.

A FARMHOUSE.

PROGRAM.

THE problem is a farmhouse, barn, etc., to be built on a farm adjoining the sea. The farm ten years ago was in good condition, but the buildings were burnt, little remains except an overgrown cart track and the cellar of the house, to indicate its original condition. From the plan will be seen the general lay of the land, and the position of the old cellar, 26 by 50 ft., the creek, the brook, the pond, and the trees.

The new owner wishes to rebuild. He has a wife and four children, keeps one servant, and has two farm-hands



in the house. He wishes to utilize the old foundation, but will have to build larger. The situation is dry, and he prefers a story and a half house to two stories or more. The house will be of brick from the adjoining kiln. It is to contain a large kitchen and an open shed or summer kitchen adjoining, where even in winter washing can be done; a large living room and a small office or sitting room for his wife. They have town water supply so that they can have a closet for the men on the first floor, and a bath room on the second. There will be three bed rooms on the ground floor for farm-hands, and four on the second floor.

The barns, etc., will be on the level ground to the north, with the farmyard facing south. The barn must accommodate eight (8) cows, four (4) horses, pens for pigs varying from two or three to a dozen, loose boxes, one or two, for calving or for a sick horse, sheds for wagons and farm implements and machinery, paddocks, sunny and warm, for winter for both cows and horses. Space is to be reserved and laid out for a hedged garden.

The general style of the house will be very simple, even quite plain; its charm depending largely on the masses and their disposition, on the proportion of the rooms, rather than on decoration.

DRAWINGS REQUIRED: One elevation, or two, if necessary, to show both house and barn. In one corner on the same sheet is to be a sketch plan of the group, not necessarily to scale, but giving the complete lay-out and surroundings, as shown on the accompanying sketch. The drawing is to be in black ink without wash, upon a sheet measuring 15½ by 10 ins.

Each drawing is to be signed by a nom de plume or device, and accompanying the same is to be a sealed envelope with the nom de plume on the exterior, and containing the true name and address of the contestant.

The drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before September 1, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Some well-known architect, whose name will be announced later, will judge and criticize this competition.

INTERIOR OF THE CHURCH AT ASSISI,
ITALY.

IMPRESSIVENESS in interior architecture is gained in different ways. In the cathedrals of Amiens, or Cologne, the vast height of the nave and the splendidly narrowing perspectives of the aisles are tremendously effective. The impressiveness of Monreale comes from its brilliantly colored mosaics and graceful proportions; that of St. Peters from its enormous scale and rich decorations. At Assisi the elements of size, of height, and of brilliant color are lacking. As one enters the lower church, with eyes blinded by the bright Italian sunlight which floods the *piazza*, the gloom of the cavernous interior seems almost impenetrable, and nothing can be discerned of the details which crowd the walls. But, little by little, as the eyes become accustomed to the darkness, the forms of the architecture begin to be made out: the massively groined vaults, the deeply hollowed chapels, the sturdy pillars, and the shadowy altar assume shape. Aside from the broad beam of sunshine which streams in from the open door, no light reaches the interior except through a few narrow and richly stained windows. Then gradually it is perceived that the arches, ceilings, and walls are covered with the most brilliant frescos and arabesques, and the effect is seen to be one of the most impressive that the mind of man has ever conceived.

The church of St. Francis, at Assisi, consists really of two churches, one above the other. The lower church, which is the subject of our illustration, was begun in 1228, according to Vasari, by Jacopo Tedesco; but after 1232, it appears to have been handed over to Filippo da Campello. The chapels are crowded with tombs and relics, but the especial interest of the interior lies in the famous series of frescos by Giotto, the scenes from the life of Jesus in the transept, and especially the four famous paintings on the vaulting above the high altar illustrative of the vows of the Franciscan order: Poverty, Chastity, and Obedience, and an apotheosis of St. Francis. Simonds, in his "Renaissance in Italy," says of these paintings, that "Giotto approached the deep things of the Christian faith and the legend of St. Francis in the spirit of a man bent simply on realizing the objects of his belief as facts. His allegories of *Poverty*, *Chastity*, and *Obedience* at Assisi are as beautifully and powerfully felt as they are carefully constructed. Yet they conceal no abstruse spiritual meaning, but are plainly painted 'for the poor laity of love to read.'"

An Architects Itinerary.

BY H. B. PENNELL.

IT is quite as difficult, and perhaps quite as unimportant, for a writer to compose an article on European travel without plagiarism as it is for an architect to design a building which attempts to disclaim its ancestry. Perhaps in either case a familiar truth in new dress can lay the best claim to originality. Surely the fact that architecture is composed of two elements, theory and practice, is as old as art itself. By theory, we mean knowledge of the rules of architecture; by practice, the application of the theory in brick and stone. In other words, architecture includes traditions, laws, and formulas as well as



TEMPLE OF NEPTUNE AT PÆSTUM.

their expression in concrete form. Theory is the art, the science, the history, the education of taste, and sense of proportion; practice is effecting a result by the combination of these elements in building materials, and adapting them to the requirements of the problem, the civilization, and epoch. Each of these parts is necessary to the whole, architecture. When we study a building it is not enough to examine its plan, its construction, its composition merely; we should inquire into its historical antecedents, the nature of the materials used, the exigencies of the climate, the customs of the times, and the needs of the people.

Much has been written of the educational benefit to the architectural student of measuring and drawing the buildings of Europe, and studying them in plan and elevation, section and detail. In England, especially, is this method paramount; in France, it is happily preceded by thorough academic training; and wherever or whenever it is used, it should be combined with a wide knowledge of the history and science of architecture. Otherwise, the theoretical education is only partial and will result in practical archæology, — mediævalism or classicism, incongruous and inappropriate. So deeply is the American student imbued with the necessity of using the two-foot rule, that his tendency is to know the length and thickness of the huge stones of a mediæval palace before he considers their connection with the "strenuous life" of the times. We are not of the opinion, however, that it is unprofitable to carefully measure and draw out existing buildings, even if they have been done ever so accurately, and published by other and abler men. Such work is

very instructive, and, combined with other methods of observation, will undoubtedly be beneficial. But this should not finish our study of that particular building, and if there is time for only one thing, we much prefer the more general knowledge to the accumulation of architectural data, or the making of small sketches, which, however edifying to the uninitiated, are of little value except for practice in drawing.

The disregard for the historical significance of architecture is largely responsible for the modern imitations of former styles; and not until architects have the proper reverence for the latter, can clients be dissuaded from building Francis I. châteaux, or living in meaningless Empire or Louis' rooms. The present chaotic condition in this regard can only be righted by concerted action; and in the mean time it is incumbent upon students to understand the variations in style of the different epochs and countries, their relationships and development, in order to appreciate their true meaning and character.

To do this it is necessary for the architectural student on a European trip to have a systematic plan of travels, and to travel slowly. It is quite out of the question to adopt the method of the typical American tourist, whose celerity will always be an object of wonder to Europeans. The capacity to take in all Europe on a short vacation, the ability to sum up in a few words the relative merits of countries, governments, and peoples, — to say nothing of their art, — is distinctly a tourist's prerogative. Comments on their travels, heard on multitudes of returning steamers, are seldom more comprehensive than: "London was drizzly," "St. Peter's was awfully disappointing," or "Oh, wasn't St. Mark's lovely by moonlight?" It is beyond human possibility for a student to travel as a great many tourists do and receive any



INTERIOR, CAPELLA PALATINA, PALERMO, SICILY.

real benefit, artistically, from what he has seen. To him, one gallery or one building studied carefully is of more value than many countries seen in a confused and superficial way in a few months. Just as there is no "royal road to learning," so there are no rapid transit facilities; and although it may not be possible to convince him of it before he has made both experiments for himself, it would be far wiser for an art student with only a few months at his disposal to devote his entire attention to one city, or one county, or at most one country, than to adopt the usual tourists' method. Take Warwickshire, England, for example. One's time could easily and profitably be spent in studying the houses, gardens, and churches. London alone is almost a whole continent, both in area and in the comprehensiveness of its wonderful museum collections; while either Paris or Rome can be only casually seen in less than a month.

Then the indispensable Baedekers, with their convenient routes arranged in geographical order, regardless of the confusion of ideas or sentiments they may create in one's mind, are adapted to a tourist's, not a student's, method. Hundreds or even thousands of years may have elapsed and their artistic results entirely disappeared

shores of France are next sought, and here, owing to the existing confusion of styles, he looks at Romanesque, Gothic, and Renaissance in quick succession, without any attempt at classification, and judges everything from the ordinary personal standpoint of like and dislike. We feel sincerely sorry for our student, for we have suffered with him. There may have been reasons why the journey was not arranged differently. He may have started in summer, and as the guidebooks said Italy was hot, he took the northern route. But personal comfort or discomfort is a poor guide to follow, for it is quite as disagreeably warm in England in July as it is cold in Rome in December. Or he may have wished merely to see everything, intending to rearrange it in his mind when he had time, which never happened.

Doubtless there are many and various opinions as to the disposition of one's time in Europe. Whether it shall be devoted to travel, to academic study, or to a happy combination of both depends largely on the previous training and the taste of the student. But, as has been said, it is certain that it is necessary to travel slowly, and to arrange one's journey as chronologically as the geographical conditions will permit. For instance,



A GREEK THEATER AT TAORMINA, SICILY.

between the fall of one city and the rise of another not an hour's ride distant. Even in the same city, the conventional route planned to avoid the necessity of retracing our steps leads us out of some isolated classic temple of extinct civilization, under the walls of a mediæval fortress, and into a modern cathedral, whose very classicism makes it difficult to separate in our minds the anthems of the Christian church from those we have just imagined we heard chanted to the great god Pan.

It is almost a misfortune, perhaps, to the architectural student that Europe lies with its west coast — the coast of most recent civilization — nearest to us. The American student, arriving from the New World, finds it necessary to say his architectural alphabet backwards. England being most convenient to reach is naturally the first place visited, and the adopted home of Gothic architecture is known before the land of its birth and development. The

in Italy, Rome and Ravenna should be known in order that their influence might be traced westward across the continent during the Middle Ages; the Gothic cathedrals of France should be studied after the Northern Romanesque, and before those of England or Germany; the ornamental character of the Gothic influenced the Renaissance on its introduction into France and resulted in Francis I. work; classic art had its rebirth in Italy, and we should become acquainted with it there before meeting its English, French, or German relatives; ancient Rome contained all the elements of the Renaissance, while Roman architecture must be traced back, as you would navigate a river, until the springs of purest water are found at the source, in Greece. We should begin, then, at the source, and go down-stream. It is certain that a trip planned in this way would be most satisfying in its impressions, and the systematic study most



SARCOPHAGUS, CALLED ALEXANDER'S MUSEUM, AT CONSTANTINOPLE.

beneficial in its results. Let us map out an ideal itinerary upon these lines, and formulate a method for observation and study.

There need be no uncertainty where to begin our journey. We will take a steamer for Naples, and no bay could form a more imposing entrance to the scene of our travels. Whether it be by night or by day, we cannot be disappointed. At night the lights of the city gleam like a necklace of opals about the throat of the harbor; and in the morning the city, spread over its many hills, lies before us. On one side Prosillipus shades the tomb of Virgil with its umbrella pines; on the other, Torre del Greco and Pompeii lie at the foot of Vesuvius, with bloody mouth still gloating over its prey. Castellamare and Sorrento continue the coast line, and far out to sea, looking like another fleecy cloud, lies the rocky isle of Capri. We land, and proceed at once to Pæstum to see the ancient temple that, in the sixth century, B. C., adventurous Greeks erected to Poseidon. It has been familiar to us, perhaps for years, in books and photographs, but it is the actual presence of it as it looms before us at the rounding of a curve in the railroad that fixes its real aspect in our minds forever. The ruin stands, isolated and majestic, on the fever-stricken marshes where once thrived a busy Hellenic city, and still faces the sea, which, like its god, has long since deserted the shrine. We have just read the history and pictured in our minds the days when Rome was but a few hovels, in order that we may sympathetically and intelligently enjoy our first sight of early Greek art. Slowly the picture of the past completes itself, and in its true light the temple stands revealed. We are not now

archæologists, but architects, living in the age of our building. We stay here several hours, studying each detail of its organism, comparing the proportions of column and entablature with those of the Parthenon, drawings of which we have brought with us. Then we visit the neighboring Basilica and Temple of Ceres, thinking over the chain of centuries that connects the past with the present. An old shepherd passes with his dog and flocks, and we realize that his type is all that remains of that primitive civilization. Our return trip to Naples leads us along the magnificent highway to Amalfi, with Ravello on the mountain above it, and across on a boat to Capri, thence back to Sorrento and Castellamare. At Naples we go to the museum and look only at the few Greek statues and the collection of vases. Here our method of study is to begin with the Greek originals or ancient copies, and take the rest in turn. In this way we make sure of our first impressions instead of enervating ourselves before hundreds of mediocre and promiscuous works. Before leaving the museum we return to the masterpieces. We are astonished to find them even more beautiful than at first, and readily understand why they are unique. There are few fine Greek statues in Naples, so after looking at the Greek bronzes and excellent painted frieze from Pæstum of warriors departing for battle, we leave Naples for Sicily.

The Florio-Rubattino steamer leaves at 8 P. M., and in the morning we find ourselves at Palermo. The museum contains the recently discovered metopes of Selinus, whose archaic character shows that sculpture was less well developed than architecture at that period. The various political changes of Sicily have left their stamp on the architecture of Palermo, and our study of early Greek work is interrupted by our admiration for the mosaics in the Capella Palatina, Monreale and Martorano, and the Cathedral at Cefalu. Segesta is next on our route; and the unfinished Doric temple is best reached on horseback from Calatiformi. The same day we go on to Selinus, where the grand temples on an eminence overlooking the sea give us our first conception of an acropolis. A prostrate Atlantis lying near the Temple of Zeus is the sole remaining giant inhabitant of Girgenti, which Pindar called "the most beautiful city of mortals." In the rock-cut theater at Syracuse, we imagine Greek actors in a classic tragedy, and listen to



SANTA SOPHIA, CONSTANTINOPLE.

reverberating echoes in the Ear of Dionysus. The height of enjoyment in our Sicilian tour is reached at Taormina. We are attracted by the great beauty of its situation, its romantic history, its charming Greek theater facing Mt. Etna, and no less by the modern luxuries at the hotel on the site of an ancient monastery. We leave Sicily at Messina for Piræus, and land almost in sight of the Acropolis of Athens, reaching the first goal of our journey with minds prepared to appreciate the glories of architecture.

Our first duty is to review Greek history and refresh our memories on Greek mythology and art, reconstructing



INTERIOR OF SANTA SOPHIA, CONSTANTINOPLE.

from plans and restorations the temples and monuments, and from history the country and civilization. Then days and weeks may be spent in Athens in noting the careful workmanship, and in sketching the delicate forms and noble disposition of masses with which the Greeks stamped their personality on their work. Constantinople is easily and quickly reached by various lines of steamers from Piræus. An added inducement to visit this city, whose cathedral is dedicated to holy wisdom, is offered by the Greek sarcophagi recently discovered at Sidon, and now in the museum here. Concerning the Alexander sarcophagus, which dates from the fourth century, B. C., and is the most beautiful and best preserved of the group, Gardner says, "No one who has not seen this sarcophagus can realize the effect produced by a correct and artistic application of color to sculpture." Santa Sophia is the Parthenon of Byzantine architecture. Its dome is as vast and as lightly suspended as ever; but infidel hands have covered the golden mosaics, and the huge green shields on the four corner piers announce



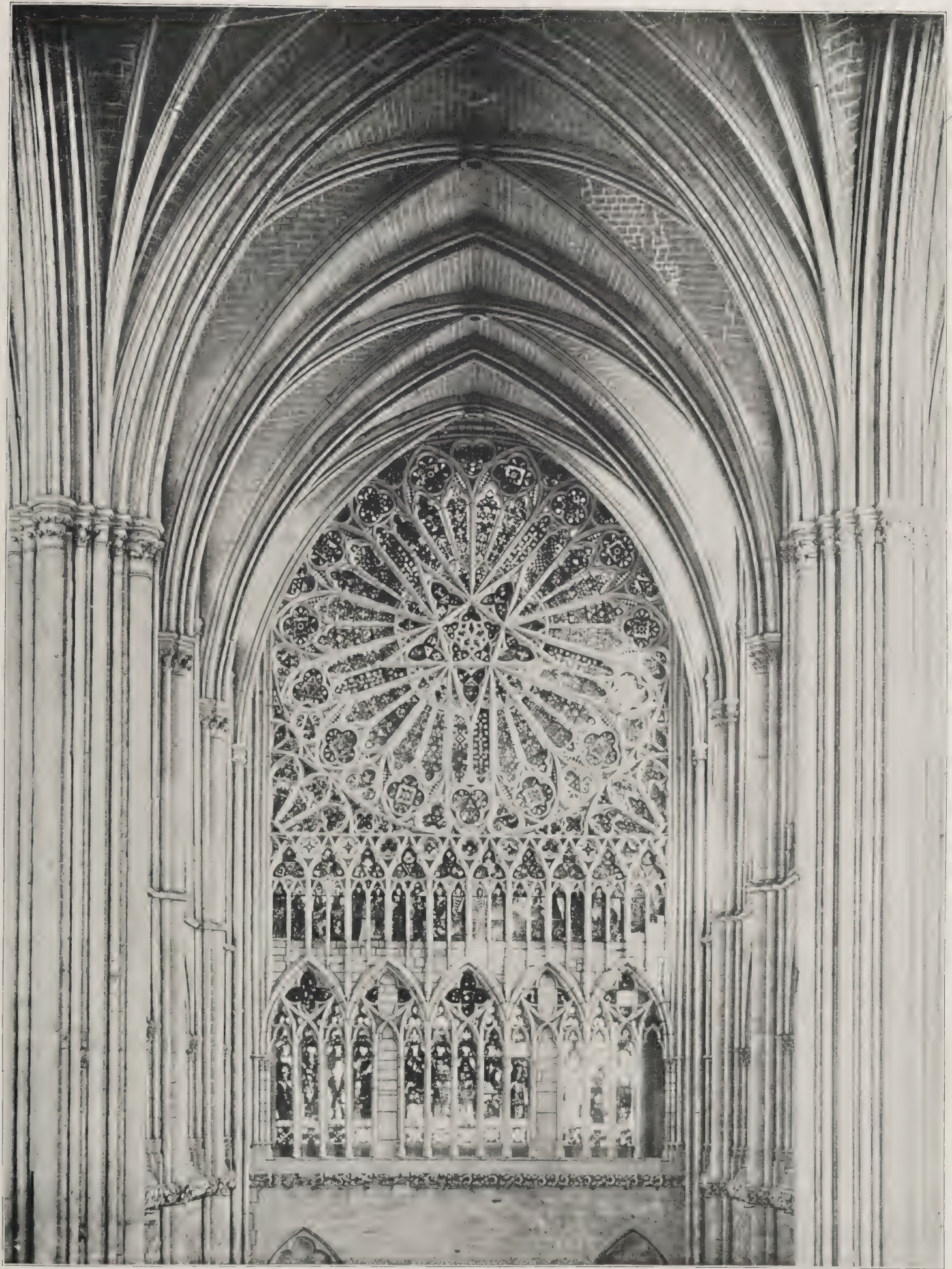
RESTORATION OF THE ROMAN FORUM.

that Allah is God, and Mohammed, His Prophet. The turbaned guide, in recognition of the dollar just paid him, points a scornful finger at the Christian cross, dimly showing on the vaults; but neither the frenzied devotion of the Dervishes, nor the magnificent spectacle of the Salamlek, is enough to convince us, as we leave the Golden Horn, that one day the ancient mosaics shall not again appear.

Returning, we leave the steamer at Piræus and cross Greece by train, first making a short trip in the interior to Corinth, Argos, and Mycenæ and Epidaurus; then on to Olympia, and leave Patras for Brindisi. From Greece the course of empire took its way westward. Rome was the arena of the centuries intervening between Athens and Byzantium, and Pompeii is the intermediate step.

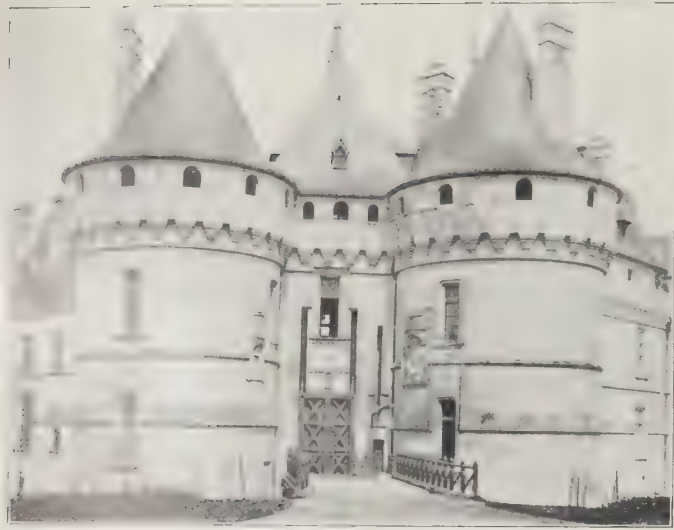


PORCH OF SAINT-TROPHIME AT ARLES, PROVENCE, FRANCE.



TRANSEPT WINDOW, AMIENS CATHEDRAL, AMIENS, FRANCE.





CHATEAU DE CHAUMONT-SUR-LOIRE.

The newly excavated house of Vetius, with its architecture, sculpture, mosaics, frescoes, fountains, and garden, is a well-preserved example of the architecture of the time. Already we can see evidences of the conceptions. In imagination we turn from the festal procession, filing around the courtyard of the Temple of Apollo and past the statues of Greek cult, to greet another procession entering under the triumphal arches in the Forum; and before the greatest temple, that of Jupiter, listen to Roman orators extolling the god of their victorious arms. Later the gods were forgotten, and statues of conquering emperors occupied the sacred pedestals, bearing the attributes of Jupiter.

In Rome all our ingenuity is taxed to carry out our chosen program. We must conscientiously go to the Forum and the Palatine Hill, to Hadrian's Villa and the Baths of Caracalla, and out on the Appian Way, with Lanciani's works and photographs of restorations in hand, until classic Rome is completely before our minds. We will go to the Lateran Museum on the day that the pagan sculpture is exhibited and view the remnants of a decadent art whose zenith we have already seen, and then to the Colosseum, where, amid the prayers of dying martyrs, the bloody fabric of Rome fell, and the dawn of a new era appeared.

Much has been written of this most interesting period in Roman annals; and before beginning the study of early Christian art we need to become acquainted with the social conditions. There is no better book than "Quo Vadis" to gradually awaken our pagan conscience to receive the new revelation. We must commence our study with the catacombs and the early sarcophagi in the museums, and find the beginnings of the new art as debased as the decadence of paganism. The refined proportions of Greek statues and the rounded muscles of the athletes failed to interest the believers in the new doctrine that the body is nothing, the soul everything. Rome has many churches which show the earliest experiments in Christian architecture, but not until Constantine had removed the seat of empire to Byzantium was anything of value produced. Then, gradually, artists became accustomed to using colored mosaics for walls and ceiling, and representing their figures in garments of Oriental splendor. In the churches of S. Paolo Fuori,

Sta. Maria Maggiore, S. Lorenzo, Sta. Agnese, Sta. Maria in Cosmedin, S. Clemente, etc., we see the gradual growth of the basilican type. The abundant fragments of ancient ornament in porticoes and cloisters represent Eastern as well as Roman motives. The churches of Rome, together with those in Tuscany, carry us across the abyss of mediæval art in Italy up to the fourteenth century.

In the latter part of the fifteenth century we see the Renaissance, after which the baroque and rococo sprang up like mushrooms. The villas of the popes and the palaces of noble families next invite our attention. With Renaissance architecture we begin to reap the benefit of our systematic study. Like the architects of the fifteenth century we are familiar with the monuments of ancient Rome, and we can find in the baths and tombs of Rome and Pompeii the precedents of the details of the columns, caps, and moldings, of the colored stucco decoration of ceilings and pilasters, and of the appearance of pagan gods and goddesses as motives of ornament.

Rome possesses unlimited wealth of artistic treasure. Permissions to work in the museums, galleries, or public buildings are readily granted to students, and it is vain to expect to find in Italy a more fruitful place to study. Rome is the architectural Mecca of Italy as Paris is of France.

The pursuit of our course of historical study north of Rome is a simple task. We have already found painting and sculpture inseparably connected with architecture. It is only in modern times and owing to the complex conditions of life that they have formed distinct branches and grown out of sympathy with architecture and with



FACADE OF THE CHAPEL, VERSAILLES, FRANCE.

each other, much to the detriment of the greater art and more so of the lesser arts. Not until they shall once more be in unison, can we expect to see works like those of the old masters who worked in all three branches as one art. In the galleries of Perugia and Florence the works of each school are admirably arranged to give one an understanding of their characteristics; and we trace the influences of masters upon pupils in chronological order, fixing in our minds ineffaceable memories of favorite pictures.

The palaces of Florence are a distinctive expression in architecture of an age and social condition. Family feuds were incessant, and the nobles erected huge two-story structures reaching the height of a modern ten-story building. The bravado Cellini, recounting his exploits, could give a no more vivid picture of the times than did the architect by the character of these buildings. Historically, they succeeded a style whose masterpieces were for religious or civil purposes, which hitherto had been the domain of architecture. Before leaving Florence, we will make excursions to Lucca, Pistoia, and Pisa, and to the surrounding country and hills.

From Florence we go to Venice, and thence westward across northern Italy to Genoa. Padua, Verona, Mantua, Cremona, Piacenza, Milan, and Pavia were important centers in the development of Lombard architecture in the eleventh and twelfth centuries. We are following the route the Eastern merchants took when Ravenna was one of the important ports of southern Europe, and Eastern architectural influence, as well as Eastern stuffs, was carried across Italy and the Riviera into France and Spain.

We enter France through Provence, and become acquainted with the charming Romanesque of Arles, Nîmes, and Avignon, where sculptured apostles and saints struggle to preserve their identity amid classic Roman details, in the porches of St.-Trophime, St.-Gilles, and Notre Dame des Doms. Byzantine influence spread north into Aquitania, and appears in St. Front at Périgueux, which copies the plan but not the vaulting of St. Mark's. At Cahors we find an imitation of St. Irene at Constantinople.

In central France the development of church vaulting began, and we must take Viollet-le-Duc, Corroyer, and Moore for our guides if we wish to intelligently follow the successive steps in the growth of Gothic architecture. The theory and general principles of this style may be already well understood, but their application is best comprehended by observation. There is no more interesting literature on architectural history than that relating to this subject. The stupendous cathedrals are miracles in stone, wrought by the religious enthusiasm of the people, as well as marvelous examples of an architectural style, which, in attempting to solve a structural problem, resulted in a harmonious and organic system of construction and decoration. That there is as much both in detail and in composition to be learned from the Gothic architects as from the Renaissance masters is certain; while certain parts, as for instance, the north door of the Notre Dame, in Paris, can be compared in artistic beauty to Greek proportion and refinement alone. Whether because our modern civilization is more like the Grecian, or because of our academic training and classi-

cal tastes, the architecture of the earlier race seems nearer to us in point of time than does the Christian architecture of the Middle Ages. Whatever may be the architectural "mode" for the present, both the Greek and the Gothic should be carefully studied as they are exemplification of our first statement concerning theory and practice in architecture.

Besides the cathedrals in the Royal Domain, those of Normandy, Burgundy, and Champagne are most worthy of study, and easily reached by train or bicycle. Wheeling has many delightful advantages and attractions, and the Loire valley with its many châteaux is one of the most interesting routes.

It is impossible to write of an architect's itinerary without an enthusiastic mention of the student's advantages at the École in Paris. The previous travel and systematic study of the architecture of the past will only be an added inspiration in the solution of the ideal problems. The months, or even more fortunate years, of study in Paris necessary to get the diploma will be pleasantly varied by summer vacations in Switzerland, Germany, or Holland.

We have purposely made Spain the last country to be visited on the continent. In historical value the Romanesque and Gothic churches do not differ greatly from contemporary French examples which served as models for many important buildings. The detail was even richer, and the façades more ornate, but with a lack of logic and constructive qualities found in France. The Alhambra is the masterpiece of Spain, and its gorgeous color decoration, the stalactites, and intersecting lines of geometric patterns are all reminders of our first acquaintance with Palermo, where the Christians conquered the hated moslems, but copied their architectural style in their churches.

From Gibraltar we will sail to England, and continue our study on a bicycle trip, as the beautiful country with its fine old houses and churches is the chief attraction. Letters of introduction are almost a necessity in order to gain admittance to most estates, but the utmost courtesy is generally shown to students. There are too many tours possible through England to make it necessary to advocate any one especially. What is most important is to know beforehand what one wishes to see, and locate it on the map, for the most interesting houses and gardens will otherwise be passed by unseen.

In keeping with the domestic architecture of England is the modern movement in textile arts, etc. in London, which, while productive of much that is purely commercial, is also one of the most hopeful signs of modern times. The different societies working to produce harmony in the allied arts deserve greatest support and encouragement from architects especially; for the successful results of united efforts by painters, sculptors, and architects will be most beneficial to architecture in general.

We have received the catalogue of the exhibition which was held in the Carnegie Art Galleries by the Pittsburgh Architectural Club. All can be said of this catalogue that has been said of previous exhibitions, and it is certainly no small praise to say that it holds its own very favorably with the showing of the New York and Philadelphia exhibitions.

The Designing and Planning of Small Railroad Stations.

BY ALFRED HOYT GRANGER.

IT is only within the past few years that the great railroads in the Middle and Western States have deemed it necessary to employ an architect upon their smaller stations. Heretofore, the engineering departments pre-



GENERAL WAITING ROOM, STATION, CLYBOURN JUNCTION, ILL., CHICAGO AND NORTHWESTERN RAILROAD.

terminals. Mr. Richardson, by demonstrating to the traveling public how beautiful and appropriate a small station can be, inaugurated the change, and now we see on many of the great lines, notably the Chicago and Northwestern, the Chicago, Milwaukee, and St. Paul, the Rock Island, and the Burlington, stations either fulfilling or striving to fulfil the architect's dream of beauty and appropriateness. One of the most hopeful characteristics of our American people is its passion for perfection in whatever it undertakes, and in this passion lies the greatest hope for our architecture. Just at present we are apt to be led astray by a desire to reproduce some of the beauties of Europe in new and strange surroundings and for stranger purposes. Such reproductions can never take root or be anything more than exotics, and our practical Yankee common sense will soon lead us past this transition stage. In railway station building the require-



STATION, CLYBOURN JUNCTION, ILL., CHICAGO AND NORTHWESTERN RAILROAD.



STATION, CLYBOURN JUNCTION, ILL., CHICAGO AND NORTHWESTERN RAILROAD.

ments, while simple, are iron bound and are fast making an established style for such work. In this paper it is my purpose to speak only of the town or country station which requires a totally different handling from the city terminal. The plan, as I said above, is a very simple one.

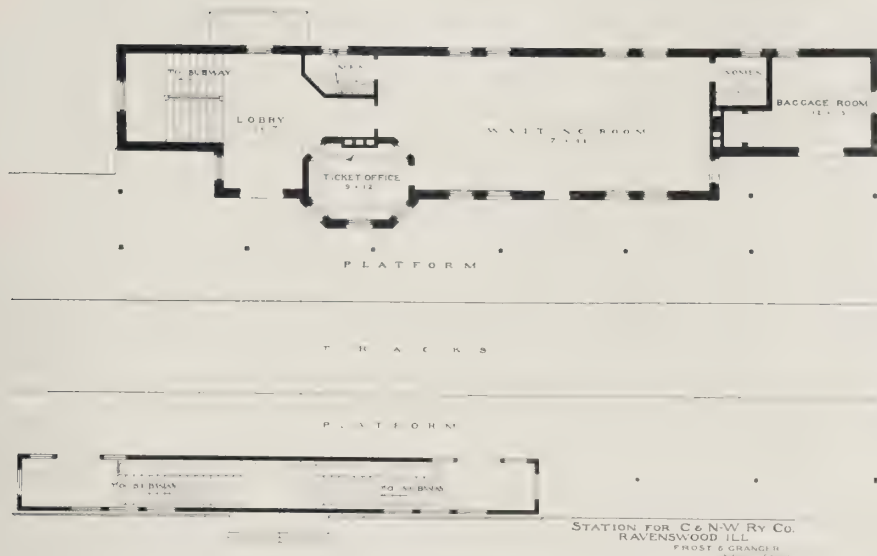
The main requirements are waiting rooms, women's retiring rooms, lavatories, ticket office, telegraph office, baggage and express rooms.

If the station is to be built in a manufacturing town, it is necessary to have two waiting rooms of equal or



STATION, RAVENSWOOD, ILL., CHICAGO AND NORTHWESTERN RAILROAD.

nearly equal size, and both must command the track so that the passengers may have every warning of approaching trains. The old plan of having a ticket window in each room has been generally abandoned, and large ticket windows are located in a lobby or ante room between the two waiting rooms and facing the entrance vestibule. In this arrangement the traveler can purchase his ticket when entering the station, and after doing so can sit in either waiting room without worry until his train arrives. Each waiting room must have convenient lava-



tories and ample exits upon the platforms. These exits should be planned to leave a portion of the room retired and free from draughts, and the entrances and exits should be so placed that the waiting rooms are not mere passages, but allow for passengers plenty of space for quiet waiting, free from the annoyance of constantly



STATION, RAVENSWOOD, ILL., CHICAGO AND NORTHWESTERN RAILROAD.

passing crowds. A drinking fountain is a desirable feature in a waiting room, and with proper study can be truly a thing of beauty. In the better class of suburban stations, oftentimes the plan of a large general waiting room, with a small retiring room for women at one end and a corresponding smoking room for men at the other end, makes a simpler and more interesting building. In such

stations a floor of large red tiles in the large waiting room is both beautiful and practical. The ticket office should be located on the platform side of the station that the telegraph operator may command the trains. In many cases it is necessary to have a small room off the ticket office for a train order room, which keeps all employees out of the waiting rooms. The baggage and express rooms are preferably located towards the larger terminal. If these rooms are separated from the main station by a covered passage 30 to 40 ft. in length, ample space is given for handling baggage even at times of extraordinary travel. This covered passage, carefully handled, becomes a most pleasing architectural feature. As a railroad station is primarily a shelter where people may wait for trains, this characteristic should be emphasized in the design. The waiting rooms should be very open to the light, while, at the same time, all piers should be even unduly heavy to counteract the constant jarring of passing trains. For similar reasons the design of a station should depend upon simple and dignified proportions for its beauty, as much ornamental detail is manifestly out of place. If the town in which the station is to be located has any marked characteristics, these may rightly be indicated in the design. The material of the station is also oftentimes governed by the locality. For example, the station at Oconomowoc, Wis., on the Chicago, Mil-



STATION, HIGHLAND PARK, ILL., CHICAGO AND NORTHWESTERN RAILROAD.



SHELTER STATION, HIGHLAND PARK, ILL., CHICAGO AND NORTHWESTERN RAILROAD.

waukee, and St. Paul Railroad, is built of split granite boulders as is the one at Hartland, Wis., on the same line, because they are found in large quantities in the vicinity. Unless, as in the two cases just mentioned, stone abounds in the immediate neighborhood, brick is the best material to be used. When the station is a brick one, it is not advisable to use much stone, as an all brick building is more consistent and, consequently, more architectural. In the past three years a new problem has arisen in and around Chicago because of the elevating of all the tracks. This necessitates two buildings: one the station proper directly accessible to all trains towards the city, with an auxiliary shelter and small baggage room for outgoing trains on the opposite side of the tracks. I show illustrations of three stations of this

character: one at Ravenswood, Ill., one at Highland Park, Ill., and one at Clybourn Junction. In all stations of this character, the two buildings are connected by subways under the tracks.

These subways are broad tunnels, lined with enameled brick

lighted by elec-

tricity. The station

is an

open

with tracks on both

sides, and serves as

a transfer between

two main divisions

of the Northwest-

ern road. It is

located centrally between these divisions, with tiny shelters

covering the stairways to the outer tracks. These three

stations, and some others which I show, are more suburban

and, consequently, have no lunch room facilities. Where



STATION, WINNETKA, ILL., CHICAGO AND NORTHWESTERN RAILROAD.



STATION, PEWAUKEE, WIS., CHICAGO AND NORTHWESTERN RAILROAD.

lunch rooms are needed they should be so placed that every table and the larger part of the lunch counter may command the tracks, as otherwise many a hungry traveler will suffer untold worry through fear of losing his train. It is also desirable that the lunch room should not communicate directly with the waiting rooms in these smaller stations because of the flies and odors from cooking.

The location of the station is a matter of considerable importance, and depends largely upon the character of the town in which it is to be built. In city suburbs,



STATION, BELOIT, WIS., CHICAGO, MILWAUKEE, AND ST. PAUL RAILROAD.

where there is a daily going to and fro of many people, it is desirable that the platform sheds should be placed close to the tracks so that passengers may be protected from the

weather when getting on and off trains. Some railroads place the stations 30 or 40 ft. away from the tracks, but this is not desirable except in isolated points from which there is but little travel. Most smaller stations belong to the side-

house character, with through tracks upon but one side of the building; hence the platform shed should be long enough to afford shelter to all the traveling public. Much stress is being laid these days upon the landscape effects around stations. The love of the beautiful is born in every man and grows with his opportunity for satisfying it. The more beautiful the surroundings of any building are, the more satisfactory is that building bound to be. Some roads embellish their station plats with numerous beds of gay flowers. This form of adornment seems, however, to be more adapted to a lady's garden, and is not to be recommended. The most suitable and practical results are to be obtained by the planting of shrubs and bushes which do not have to be renewed each season, but steadily increase in value. Where the land allows it, the station should be approached on its town side by broad roadways, skirting the building so that many carriages can approach at the same time. These roadways when bordered with clumps of flowering shrubs are of great beauty, and give untold value to the architecture of the building. Where the character of the station and the climate allow it, plants of ampelopsis or Boston ivy should be set out when the grading is done, as they form the greatest embellishment. There is very little diversity in the plans shown as illustrative of this paper, but in almost every town where a station is needed there is some peculiar local point which makes the problem interesting to a designer, and equally interesting, we hope, to the traveling public, for whose use these stations are built, and upon whose criticism depends their real architectural future.

A BRICK chimney, 160 ft. high and 8½ ft. square at the base, and 4½ ft. diameter at the top, has been overthrown in St. Louis by the use of hydraulic jacks, says the *Engineer*. The chimney was first undermined on one side, and three 10-ton hydraulic jacks were placed in position under the side. A hawser was then fastened about the chimney, 60 ft. from the ground, and ropes led from this hawser to crabs placed at a distance of about 100 ft. With eight men at each crab and men at the hydraulic jacks, the chimney was slightly lifted and pulled at the same time; the men at the jacks left their posts at the first warning crack, but those at the crabs continued their work until the chimney fell. — *Scientific American*.

“The Brickbuilder” Competition. II.

COZY CORNER AND FIREPLACE IN THE LIBRARY.

CRITICISM AND AWARD.

BY GEORGE D. MASON.

LOOKING backward and reviewing the changes in character which have from time to time come over buildings in America, it is surprising to note the number

Mansard, Victorian Gothic, Romanesque, Italian Renaissance, and the present fever — English (?).

It is unfortunate that architects of fifteen years ago mistook the terms “rock-face” and “Romanesque” to be synonymous; equally unfortunate that those of ten years ago believed a draughtsman capable of drawing an arabesque-carved panel to be a consummate master of the style of the Italian Renaissance. Such has been the case, and the fault is still with us, as is evinced when we see the angular, unsightly buildings, with even more unsightly interiors, which are being erected all about us, and which we are blandly informed are “English”! Not

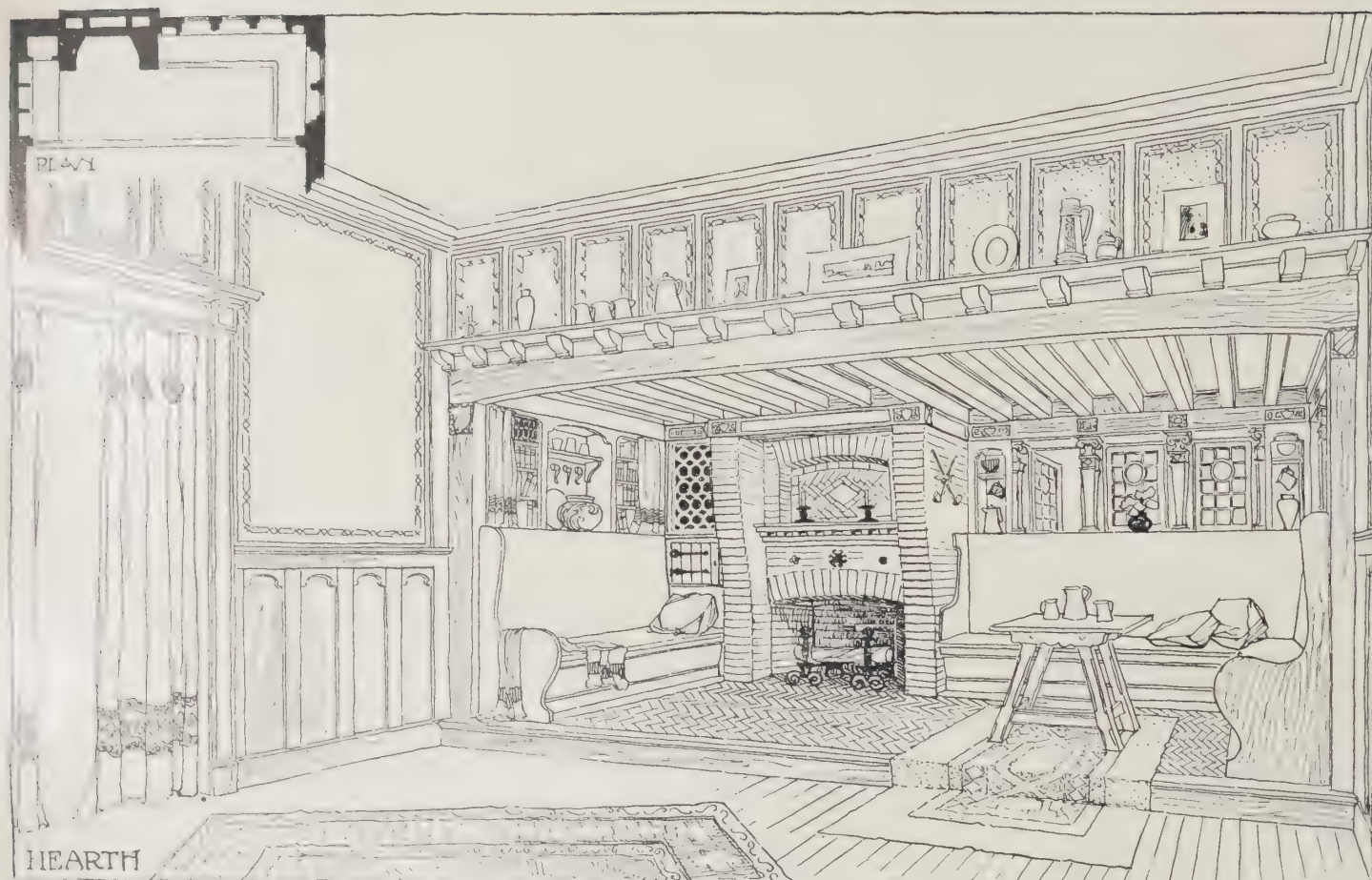


FIRST PRIZE DESIGN.

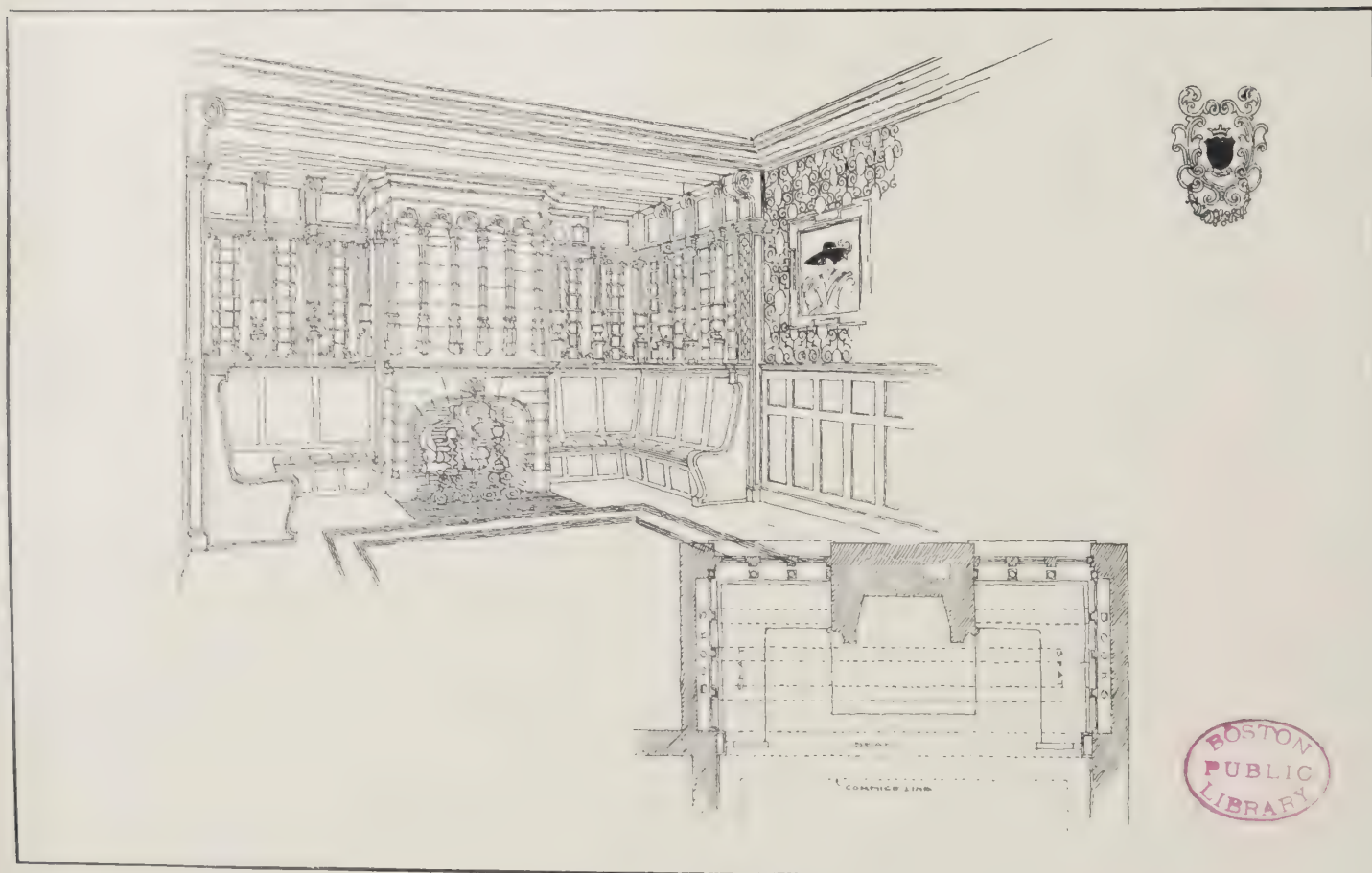
WALTER E. RICE, BOSTON, MASS.

of evil influences which have been brought to bear upon what is called American architecture. It was well born, but during the period of carpenters' classic, grew into degeneracy, and has since suffered from periodical attacks of virulent disease, which occur about every ten years, growing worse each time. The cause of these outbreaks is generally the importation of an alleged architectural style which is not suited to the conditions of life existing in America, and this “style” is worked out only in caricature. This is true of the early Italian,

the “English” of Norman Shaw, of Arnold Mitchell, of Leonard Stokes, or of Ernest Newton, but of the sort that is illustrated in “The Studio,” etc.,—an architecture minus composition, proportion, and detail, sometimes decorated with trees growing up from the base and held in position by a picture molding; often they resemble the arm and leg bones of a human being, with ends covered by a species of crinkled lettuce leaf. This is the style which has influenced many of the designs entered in this competition.



SECOND PRIZE DESIGN.
WILLIAM L. PHILLIPS, ROCHESTER, N. Y.

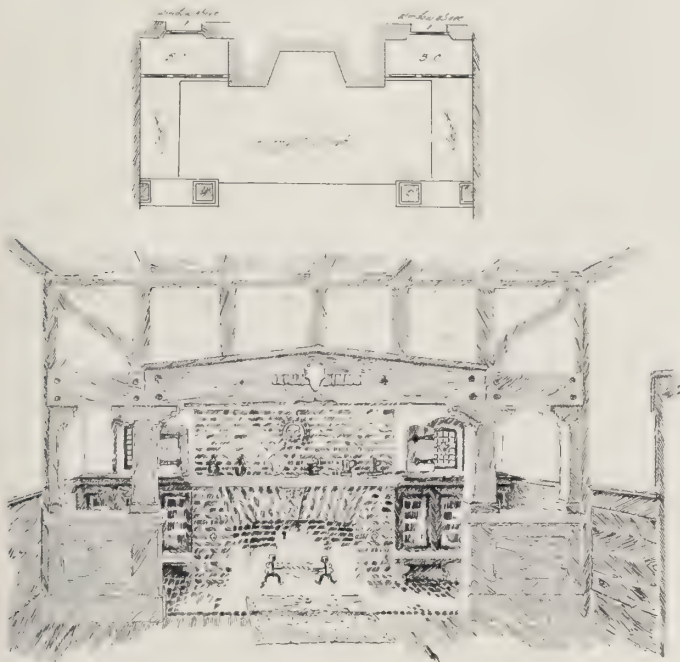


THIRD PRIZE DESIGN.
JOHN STAFFORD WHITE, ST. LOUIS, MO.



There was but little difficulty in deciding which drawing to place first. "Poor but Needy," while stiff in general effect, has in some respects a homelike character. The seats are broad and comfortable looking, the mantel is well proportioned, and in a colored faience or terra-

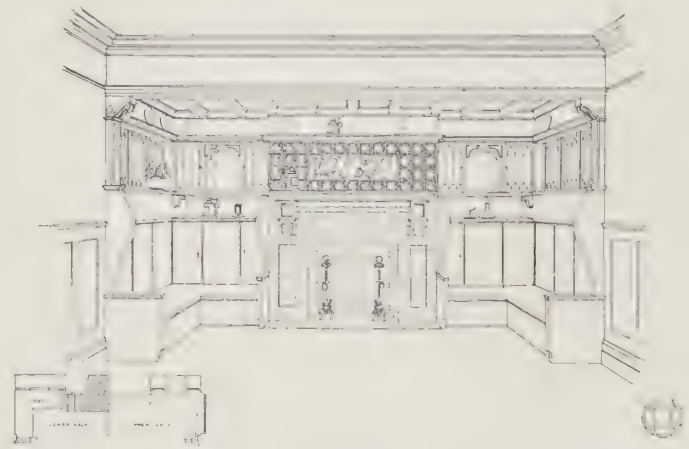
and had it not been for the ugly fireplace and bulky detail between the windows, it would have been given



MENTION.

G. A. FROST, TOLEDO, OHIO.

cotta could be developed into a pleasing design. The treatment of the ceiling and general lines of the room are consistent. The handling of the window is commendable for its simplicity; the cusped and pointed panels above the mantel shelf should have been omitted—at least over the picture. The wide projection to the sides of the mantel shelf and the large hinges to the cupboard doors would make the seats next the fireplace uncomfortable. The beam and post treatment which separates the



DESIGN SUBMITTED BY CHARLES F. HOPPE, NEW YORK CITY.

first place. The arrangement of pottery, pictures, etc., as well as the decorative way in which the drawing is presented, indicate that it is the work of an artist.

There are three designs which claim consideration in



DESIGN SUBMITTED BY HAMILTON MURDOCK, SAN FRANCISCO, CAL.

arriving at a decision as to third place,—"Beauvis," "Escutcheon," and "Black Cat." Of these, "Escutcheon" is the most interesting; but as in the design marked "Hearth," which, in drawing, it closely resembles, the



MENTION.

ALLEN WINCHESTER JACKSON, CAMBRIDGE, MASS.

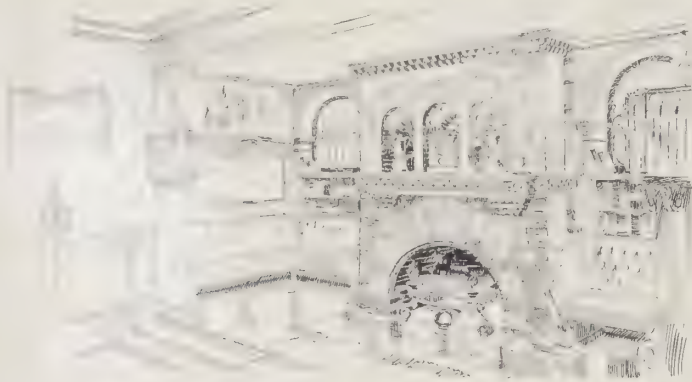
nook from the main room is suggestive of a porch to a cheap seaside cottage.

"Hearth," placed second, is the most interesting drawing submitted. It is precisely what is called for,



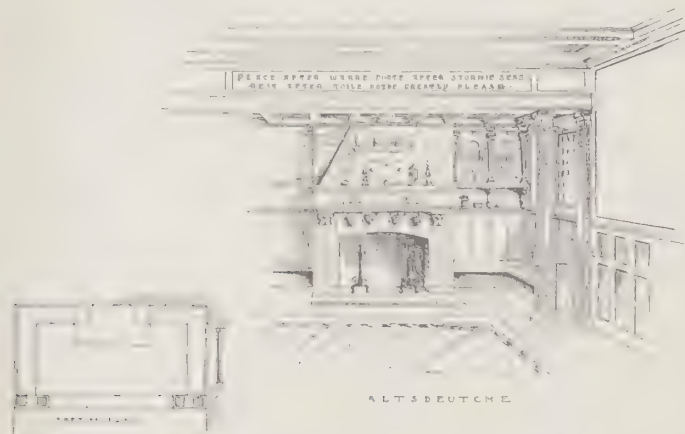
DESIGN SUBMITTED BY GEORGE P. KIEFER, MILWAUKEE, WIS.

mantel is displeasing. It is of a type that does not look well in terra-cotta or brick. The seat ends are awkward and the line of molding carried across under the windows seems



DESIGN SUBMITTED BY HUGO H. ZIMMERMANN, CHICAGO, ILL.

ed to fracture the skull of the person occupying
However, with some modifications, this design
be placed in the hands of a good detailer and made
to look well, and is considered entitled to third place.
The most interesting feature of this design is carrying
the window treatment over the bookcases, which at first



DESIGN SUBMITTED BY A. RAYMOND ELLIS, ALLSTON, MASS.

glance are not apparent in the perspective. "Beauvis" is an instance of what might have been if the designer had given his subject a little more study. Increasing the distance between the top of pedestal and underside of beam, and substituting columns for the square sup-



DESIGN SUBMITTED BY ANDREW P. COOPER, UNIONTOWN, PA.

ports, would have greatly improved this design. It is free from the influence of fads; and if its author had as good an eye for proportion as for constructive effect it would have been placed high. To this design is awarded first honorable mention.

"Black Cat" is fair in idea and better in proportion than "Beauvis"; it is similar to "Poor but Needy" in having large comfortable seats, but inferior to the latter in every respect. How did "Black Cat" expect to support that segment over the fireplace? He would have done much better to have used an arch and omitted the gargoyles, evil geniuses, or whatever they may be, that appear to be springing out of the brickwork. The proper use of color might produce a "cozy corner" out of this design, and it is considered as worthy of mention.

"Dele" and "King Philip" are interestingly drawn, but possess no merit whatever as designs. "Quartre-



DESIGN SUBMITTED BY F. C. NIROUS, MEDFORD, MASS.

foil" has a sensible brick and terra-cotta mantel, but the balance of his design is an example of what not to do. "Wreath and Pipes" shows a design such as one sees in the catalogues of brick manufacturers; but if the ornamentation had been omitted from the mantel this design would have been awarded a third mention. Of the other seven designs, none are worthy of serious comment.

WE are in receipt of Vol. XIV. of the "Technograph," published annually by the Association of Engineering Societies of the University of Illinois, one of the most interesting of a series of technical publications which is added to each year by our scientific schools. This number, the contributions of which are entirely from those connected in some manner with the University, contains several interesting and valuable papers, notably one on the manufacture of terra-cotta and its use as a building material, by H. A. Webber; and another by Newton A. Wells on the technical acquirements and difficulties of mural paintings, this last article being illustrated by photographs of the painted decorations made by Mr. Wells for the library of the University. The publication is obtainable at the University at a cost of fifty cents.

Fire-proofing.

SOME INCONSISTENCIES IN MODERN FIRE-PROOF DESIGN.

BY J. K. FREITAG.

IN defining the word "fire-proof," the Century Dictionary states that "buildings are rendered fire-proof by the exclusive use in their construction of non-combustible materials, as stone, brick, iron, cement, concrete, and asbestos." To the non-technical reader, this definition may answer about as well as a more specific one, but for those vitally interested in fire-proof construction, a more comprehensive, or rather a more accurate definition is to be desired.

In the first place, fire-proofing cannot be accomplished merely through the use of incombustible materials; and, furthermore, the enumeration, without further qualification, of stone, iron, and cement as constituting materials producing fire-proof results, simply because they are incombustible, is certainly misleading and must be seriously objected to as applied to building construction.

A more satisfactory definition could be made as follows: Buildings are rendered fire-proof by the exclusive use in their construction of such materials as are themselves proof against serious damage by fire and water, or by the use of materials which are amply protected by fire- and water-proof coverings.

In the light of present knowledge, however, even this extended definition is not sufficient to define properly the ideal of fire-proof excellence, — for, in all things, an ideal must be set toward which all efforts tend, and through such striving alone improvement can be made possible."

Ordinarily, the investor considers his structure fire-proof even in the highest degree of excellence, simply because the building has been provided with a framework of iron and steel, brick surrounding walls, terra-cotta or concrete floor systems, and possibly terra-cotta partitions. To such satisfaction, based on the elements mentioned, justifiable criticism may be offered. If, then, the commonly accepted dictionary definition is criticised, and the prevalent estimation of fire-proofing qualities is questioned, the query: what is meant by the word "fire-proof" when used in connection with building construction, requires a satisfactory answer before inconsistencies of fire-proof design can be discussed.

If by the term "fire-proof" we mean simply that a structure will not collapse after passing through the ordeal of fire, the word has already been sufficiently defined. The employment of incombustible materials which will offer sufficient resistance to fire and water to still allow them to perform their load-carrying functions, will secure this result. But ideal fire-proofing must include other requirements no less important than mere stability. The structure must not only be incapable of collapse, but *a minimum damage must result*, not alone to the building itself, but to the contents as well; and to these requirements must be added all possible protection to insure the safety of the lives of those within the structure.

For the building proper, the first question after damage by fire is that of reconstruction. Facility in this direction means gain in time and hence in renting value, as well as the decreased cost of repairs through the original employment of materials which suffer but little damage under the test conditions. The amount of reconstruction depends upon the extent or area of the fire and water damage, as well as upon the intensity of the test. If the fire is successfully confined to one apartment, it is probable that the intensity as well as the extent of the damage will be a minimum, for the volume and intensity of fire are vastly greater in large areas than in small ones.

Respecting the contents, it is to be presumed that their actual value to the owner is in excess of their insurance value. In the case of mercantile buildings or department stores this is apt to be especially true, as the destruction of the contents may involve vast business interests, at busy seasons, which could be but very partially covered by insurance values. Here too, then, the ideal fire-proofing means the absolute minimum of damage to contents by either fire, water, or smoke, to insure continuation of sales in the case of a mercantile building, or the continued use in the case of an office building or hotel, of such portions of the building as were not directly reached by the fire itself.

As to the safety of human lives, it is reasonable to presume that the sense of security in a building, on the part of either inmate or visitor, would constitute a recommendation for popular favor, an item not to be overlooked in the commercial value of the premises. From a humanitarian standpoint, also, regardless of commercial value, the utmost safety to all human life must enter into ideal conditions. The stringent municipal regulations in regard to theatre construction and exits are so familiar as to need only mention of the fact. The audience varies from one thousand to possibly three thousand in number, while the real danger lies not in the auditorium, but in the stage, which is cut off from the audience by brick walls and asbestos curtain. For such gatherings the ordinary municipal building ordinance lays down exacting requirements as to construction, design, and equipment, in spite of which such rapid destruction as was exhibited in the recent burning of the Théâtre Français in Paris is possible. The following is taken from a newspaper account of the burning:—

"It was, however, only a matter of an hour that saved Paris a repetition of the Opera Comique catastrophe, as a crowd of women and children had already gathered at the doors, awaiting the opening for the matinee, when the alarm was raised. Had the performance begun, few probably would have escaped, owing to the rapidity with which the flames spread, settling the fate of the building before the firemen could even get to work.

"Meanwhile the fire brigade had been summoned, but twenty minutes elapsed before the first detachment arrived, and then only hand pumps were brought. Finally steam pumps came; but then it was found that no water was to be had. It was 12:45 P. M., nearly three-quarters of an hour after the alarm was raised, before an adequate stream of water was poured into the burning building, which, by that time, was quite beyond help."

The loss of life would undoubtedly have been very great had the fire occurred during the performance; yet all

large cities undoubtedly contain hotels, apartment houses, or large department stores where even eight or ten thousand people may be in the structure at one and the same time, but where provision for the safety of such crowds has been passed over with but slight consideration.

From the argument, thus far, it follows that a comprehensive definition of "fire-proof" construction should

be based on the following points:—

I. The exclusive use in construction of materials which of themselves prove proof against serious damage by fire. The use of materials which are adequately protected by fire- and water-proof coverings.

II. The materials employed must permit of easy removal.

III. The internal plan or design must be made with especial reference to preventing communication between floor and floor, and between different portions of the same floor.

IV. The exterior design to be such as to prevent the communication of fire from or to adjoining structures.

From these requirements, it will be seen that fire-proof construction is a matter of rational and scientific design, embracing all the general features of a building, as well as the matter of detail in regard to the materials employed and the precise methods of their employment.

Owing to the rapid development and general use of the terra-cotta and concrete systems, requirement I. is now very largely fulfilled; but in spite of our present extended knowledge and most valuable experience, gained through the costly demonstrations afforded by many notable fires in what have been generally recognized as fire-proof buildings, many traditional methods and details of construction are still employed which constitute flagrant inconsistencies of rational fire-resisting design.

The persistent use of wood in connection with present attempts to produce ideal conditions is somewhat remarkable, and decidedly inconsistent with past experience. By this, the judicious use of limited quantities of interior trim and finish is not referred to, but rather the decidedly injudicious use of this material in large quantities and in improper ways. As used for flooring, for example, it is taken as a matter of course that any building pretending to possess fire-proof qualities shall be provided with a satisfactory fire-resisting floor system of terra-cotta, concrete, or composition material. Then, as though the use of any such system were entirely sufficient, the whole floor area is generally covered with a wood floor, and often with an under flooring of greater thickness. Were such floors always laid so that absolutely no air-spaces existed beneath them, the evil would be lessened, but the example of the Home Insurance Building fire in New York shows how easily such open spaces may be left beneath the flooring, to act as means of ready communication of flame, and to aid combustion.

Another very ordinary fault attendant upon the use of wood floors is that of allowing the terra-cotta partitions to be built upon such flooring, instead of reaching to the concrete or to the floor-arch proper. Many failures of otherwise serviceable partitions are to be traced to this cause.

But even when used with the greatest care, and with

the avoidance of the faults above specified, the introduction of such large quantities of combustible material within a building intended to resist the spread and damage of fire, cannot but be at variance with the principles of fire-resisting design. Satisfactory substitutions for wood flooring are surely to be had among the many non-combustible flooring materials now on the market. A material called "Lignolith" seems to offer many acceptable qualities, and this composition of wood fibre and non-hydraulic cement, set by means of certain acids, has already been used in several notable instances. It is fire-proof, waterproof, reasonably elastic, durable, and not cold or unyielding as tile or terrazo. For the corridors, at least, and for all public or much-used areas, some such floor as "Lignolith" or tile or terrazo should most certainly be used.

Another unnecessary and menacing utilization of wood in large quantities lies in the ordinary construction of store counters and fixtures. The substitution of counters covered with sheet metal (except possibly the polished wooden tops), with metal counters underneath and behind or along the walls, would greatly reduce the fire risk and ultimate damage to both stock and fixtures.

In the matter of partitions also, great emphasis is apt to be laid on the fact that "fire-proof" partitions have been employed, consisting of terra-cotta blocks, or possibly a light framework of metal studding and metal lathing, covered by plaster, but it is probably no injustice to say that 75 per cent. of so-called fire-proof partitions would undoubtedly fail to accomplish their purpose under even moderately severe test conditions.

Much has been said of late against the introduction of woodwork into partitions intended to resist attacks by fire, and still, even with such satisfactory means of remedying this defect as are at hand, note how present contracts still call for the old and inadequate methods. Highly varnished and combustible wooden doors, wood frames, architraves, and even sometimes wainscoting, are still employed in partitions separating rooms from corridors, and rooms of greater hazard from those containing materials or conditions of a less menacing character. Interior sash, too, are still to be found in recent work, introduced to transmit light from corridors to offices or hotel rooms, or to provide ventilation, the detail almost always calling for wooden frames and sash, and ordinary glass.

To these very well-known inconsistencies must be added the practice of supporting the terra-cotta blocks over doorways upon the rough wood frames. This is most decidedly incompatible with any fire-retarding qualities which such partitions may be expected to possess. In other cases the blocks are not of sufficient thickness or stability to resist the force of fire hose.

Such incongruities may be transposed into consistent and rational designs by employing metal studding for the framework of doors or other openings in terra-cotta partitions, as is done in many of the United States public buildings of recent design, and by using metal-covered doors, door frames, window sash, etc., as utilized by Mr. R. W. Gibson, in the Onondaga County Savings Bank Building, Syracuse, N. Y. Wire glass should also be substituted for the ordinary glass now used in such cases.

(Continued.)

Selected Miscellany.

NOTES FROM NEW YORK.

The big taxes that real estate in New York is forced to pay these days is a very serious matter. Probably it has had as much to do, perhaps even more to do, with the decline in building operations than the advance in the price of building materials. Certainly, the two united have been decisive. One of these retarding factors promises, as we have seen, to pass away; the other will remain to trouble us, unless the people of this city become a little more sensitive than they are about the extravagant manner in which the affairs of this municipality are being managed. However, we have had a very prosperous period during the present year, measured by ordinary standards, and there are no events possible that can put us back into the condition that we were in from 1893-96. That is, no conceivable event; for after four years of business prosperity and progress, we surely will all eagerly give our assistance in securing another such period of four years.

Within the next decade, New York will become a city noted for its great bridges. The new East River bridge



BROADWAY CHAMBERS, BROADWAY, NEW YORK CITY.
Fire-proofed by the National Fire-proofing Company.
Cass Gilbert, Architect.



SECURITY BUILDING, ST. LOUIS, MO.
Built with Roman brick furnished by the Hydraulic-Press Brick Company.
Peabody & Stearns, Architects.

is well under way, the great steel towers looming up so that they are seen for miles around the country. Three other East River bridges are contemplated, all of which will tend to bind New York and Brooklyn closer; and the greatest of all, the immense North River bridge, for the construction of which contracts have been let, will be a great boon. Over this it is proposed to have the railroads run, and there will be one grand terminal in New York for all the roads now landing in New Jersey, whereby the time spent in ferry travel will be saved. It is promised that this will be one of the most wonderful bridges of its kind in the world. It will be nearly twice as large as any suspension bridge now in existence. Its steel towers will rise to the height of 587 ft. above high water, more than 250 ft. above the Statue of Liberty, and half again as high as the tallest sky-scraper in the city.

Mr. Howard Gould intends building a city residence on Fifth Avenue and a country residence on Long Island, the aggregate



CARTOUCHE.
New York Architectural Terra-Cotta Company, makers.

cost being estimated at \$1,000,000. Mr. Bruce Price will be the architect for the country house and C. P. H. Gilbert for the city house.

NOTES FROM CHICAGO.

Mr. W. L. B. Jenney, of this city, is one of the official delegates to the Fifth International of Architects, to be held in Paris from August 5.

g named were granted licenses to practise architecture, at the examination held on June 19 21 at Urbana, Ill.: Henry Wittekind, N. Max Dunning, Alfred Alschuler, and Francis M. Bartholomae, all of Chicago; George W. Ludwick, Danville; Harry R. Temple and William G. Foster of Urbana; Ernest Helfenstetter of St. Louis; Andrew S. Marland, Alton; Charles A. Phillips, Evanston, and Raymond S. Wiley, Bellflower, Ill.

Under the provisions of the new constitution by the Architectural League of America at the present convention here, the new president of the League, Mr. Joseph C. Llewellyn, assisted by the executive committee of the Chicago Architectural Club, has chosen the League's first executive board, as follows: Vice-president, Richard E. Schmidt, Chicago; corresponding secretary, Emil G. Lorsch, Detroit; recording secretary, Hugh M. G. Garden, Chicago; treasurer, August Wilmanns, Chicago. The other members of the board are Robert C. Spencer, Jr., of Chicago and Prof. Newton A. Wells of the University of Illinois.

PERSONAL AND CLUB NEWS.

Early in the fall a meeting of architects particularly interested in church architecture will be held in Philadelphia for the purpose of organizing an Ecclesiastical Archi-

tectural Society. The invitations have not yet been sent out.

The T Square Club will be officially represented at the Fifth International Congress of Architects at Paris by K. Kent Day, of the firm of Frank Miles Day and Brother.

A preliminary meeting was recently held in Milwaukee to arrange for the organization of an architectural club in that city. It was decided to apply for membership in the Architectural League of America.

Prof. Thomas Nolan of the architectural department of the University of the State of Missouri, Columbia, Mo., has been called to a chair in the University of Pennsylvania.

The annual meeting of the Cleveland Architectural Club was held on May 10. The election of officers resulted as follows: President, Dominick W. Benes; vice-president, Louis Rohrheimer; secretary, W. H. Nicklas; treasurer, Stephen C. Gladwin; librarian, Herman Kregelius; chairman of current work committee, Frederick W. Striebing; chairman of entertainment committee, Kanegoro Nagaye. President Benes appointed William Warren Sabin and Abram Garfield on the current work committee, and George W. Andrews and William R. Watterson on the entertainment committee.

Percy Griffin, architect, announces the removal of his office to 9 Hanover Street, corner of Beaver Street, New York.

The annual meeting of the Washington Architectural Club was held in the club rooms at the "Octagon" on June 2. The following officers were chosen to serve during the ensuing year: President, Theo. F. Laist; secretary, Percy Ash; treasurer, Carl F. Grieshaber; directors, E. A. Crane, Arthur B. Heaton, Waddy B. Wood, Elwyn Green; delegates to the Fine Arts Association, Messrs. Wheaton, Baker, and Donn; al-



PILASTER.
New Jersey Terra-Cotta Company, makers.



PANEL, 15TH STORY, BROADWAY CHAMBERS, NEW YORK CITY.
Perth Amboy Terra-Cotta Company, makers
Cass Gilbert, Architect.



NORTH AMERICAN TRUST COMPANY BUILDING, NEW YORK CITY.

White semi-glazed terra-cotta made by the Atlantic Terra-Cotta Company.
Bruce Price, Architect.

ternates, Messrs. Marsh, Peter, and W. W. Stevens.

BOOK REVIEW.

THE ARCHITECTURAL ANNUAL. — Edited by Albert Kelsey, 931 Chestnut Street, Philadelphia.

Through the courtesy of the publishers, we are enabled to reproduce from an article on the work of Wilson Eyre, Jr., in this year's "Architectural Annual," a cut of a pleasing window in a town residence, designed by Mr. Eyre. The article from which this was taken is an ably written and appreciative critique by Alfred Morton Githens, in which the personality of Mr. Eyre's work is taken as the key to its strength. It is illustrated from drawings and sketches by Mr. Eyre, and from photographs of his executed work, of which there are over one hundred.

The "Architectural Annual" opens with an editorial summary of the architectural history and opinion of the year, brief mention of the present status of matters that have been brought under discussion in professional circles, and notes in terse form on the tendencies manifest in thought and practice. This is followed by a number of signed, and for the most part, illustrated articles and papers by men of known reputation, both here and abroad, with a few important letters, extracts from addresses and the proceedings of architectural and allied societies. The more important competitions of the year have been noted, and in some instances, especially in the

case of the competition for the University of California, they have been fully illustrated.

Apparently, one of the chief purposes of the editor was to encourage interest in municipal improvements, as there are a number of articles, mostly thoroughly illustrated, relating to civic embellishment, street pagentry, city bridges, etc., and a short sketch of the work of Baron Haussman, the father of all modern city-making.

The "Annual" concludes with a directory of architectural schools and clubs, and of the journals of the profession, the general character of each of the latter and the field occupied by it being also reviewed in a few words.

IN GENERAL.

The name of the Celadon Terra-Cotta Company, Ltd., has been changed to Celadon Roofing Tile Company. No change has been made in the management or character of the business.

The Columbus Face Brick Company have been experimenting for a long time to determine the best way to produce a rough brick for base course and trim, and have found at last on their property a shale that burns out large iron spots, and the brick has been named "Iron-clad," companion to



OFFICE BUILDING, BOSTON, MASS.
Front brick furnished by Sayre & Fisher Co.
Wheelwright & Haven, Architects.



MOONEY-BRISBANE BUILDING, BUFFALO, N. Y.
Union Akron Cement, "Akron" Brand, used in all the masonry work.
M. E. Beebe & Son, Architects.



WINDOW, TOWN RESIDENCE.
Wilson Eyre, Jr., Architect.



BALUSTRADING IN PARAPET RAIL, LIVERPOOL, LONDON, AND
GLOBE BUILDING, NEW ORLEANS, LA.
Northwestern Terra-Cotta Company, makers.

air "Ironclay." The vitrification of the brick is per-
fect, the color beautiful, and when it is considered that
the shale from which it is made contains all the elements
which produces the brick, "Iron-clad" will become inter-
esting to architect and geologist alike. It is in no sense
a freak brick, but rather, unique, and is bound to find
favor for certain classes of work with our best architects.

A. J. Blix, architect, has opened an office at Virginia,
Minn., and would be glad to receive manufacturers' cata-
logues and samples.

The Indianapolis Terra-Cotta Company reports the
following new contracts: At Indianapolis, Ind., Zener
apartments, Handy & Cady, architects; store building,



KEY, MAIN ENTRANCE, FEDERAL BUILDING, YOUNGSTOWN,
OHIO.

St. Louis Terra-Cotta Company, makers.
D. H. Burnham & Co., Architects.

entire front including cornice all terra-cotta, Vonnegut &
Bohn, architects; store building, C. E. Bates, architect.
At Milwaukee, Grace Lutheran Church, H. C. Koch & Co.,
architects, Y. M. C. A. Building, H. A. Betts, architect.
At Louisville, Liederkrantz Home Association, Charles D.
Meyers, architect. At Toledo, building for Superior
Building Company, George S. Mills, architect. At
Lexington, Ky., McClelland Building, Richards, McCarty
& Bulford, architects. At Hoopeston, Ill., Presbyterian
Church, Deal & Bullard, architects. At Appleton, Wis.,
Stevens Building, H. Wiedhagen, architect.

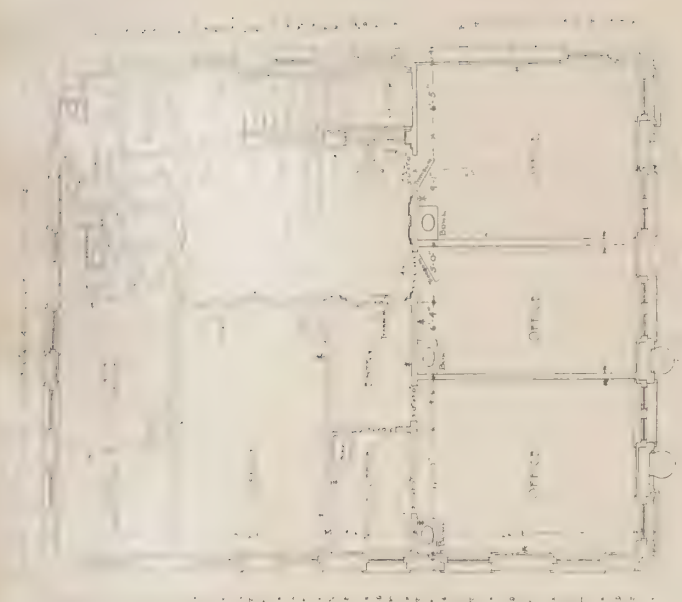


SPANDREL, OFFICE BUILDING, NORFOLK, VA.
Excelsior Terra-Cotta Company, makers.
J. E. R. Carpenter, Architect.

The Tiffany Enameled Brick Company reports the
following new contracts: West 33d Street engine house,
and 77th Street engine and hook and ladder house, New
York City, Horgan & Slattery, architects; Miles Building,
Philadelphia, Pa., Charles Balderson, architect; Tonsa
Savage's stable, Newark, N. J., J. H. and W. C. Ely, ar-
chitects; Olympia Cotton Mills, Columbia, S. C., W. B.
Smith, Wally Company, engineers; West Roxbury High
School, Andrews, Jaques & Rantoul, architects; Erie
County Morgue, Buffalo, N. Y., Lansing & Beierl, archi-
tects; Union Depot, Grand Rapids, Mich., D. H. Burn-
ham & Co., architects; Bacon & Sons' Storage Building,
Louisville, Ky., Clark & Loomis, architects; General
Electric Building, Minneapolis, Minn., Stone & Webster,
architects; F. B. Semple's carriage room, Minneapolis,
Minn., F. B. and L. L. Long, architects; C. R. I. and P. R.
R. Depot, Des Moines, Ia., John Volk & Co., builders.



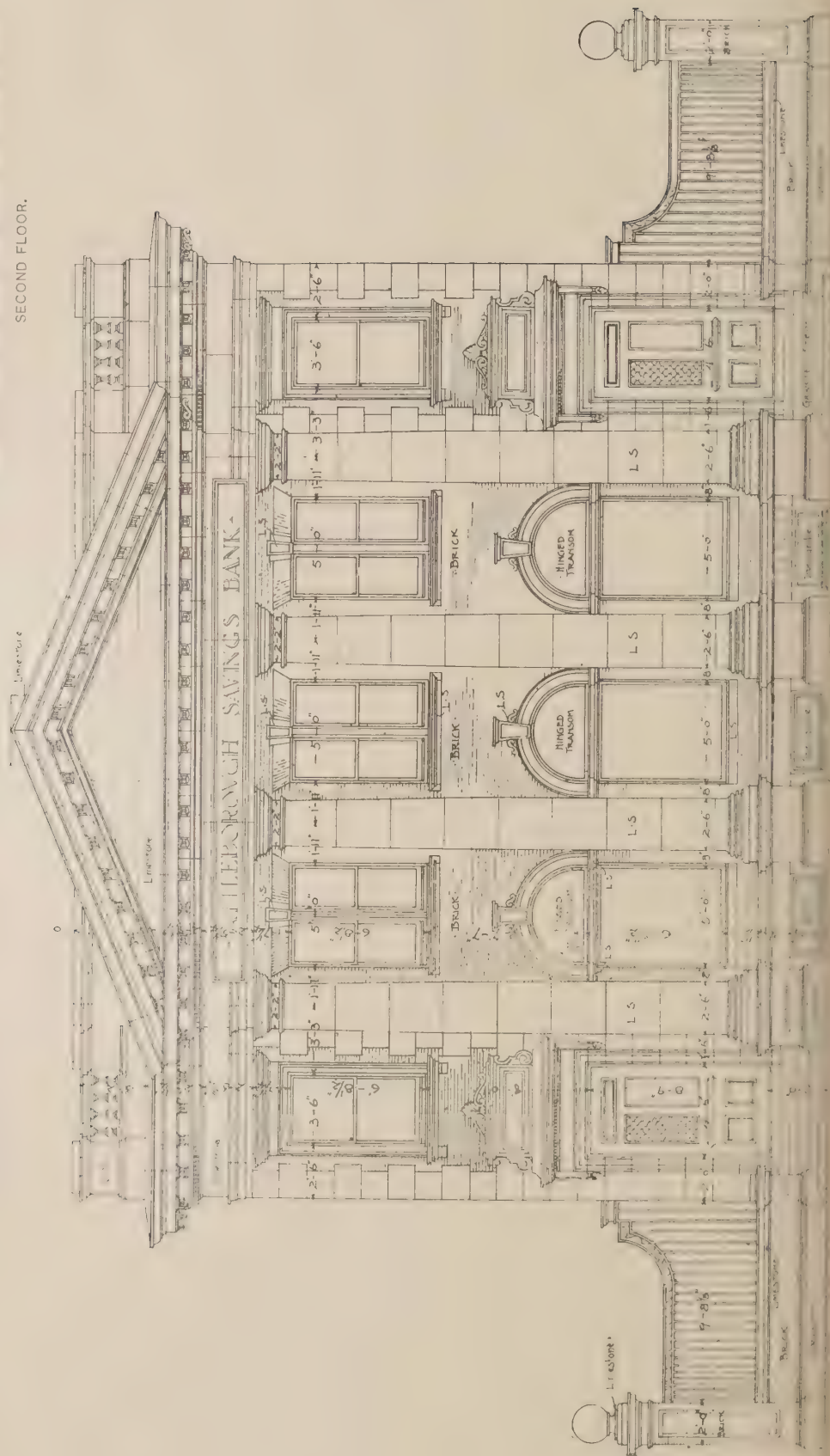
PANEL AND BRACKET.
Conkling-Armstrong Terra-Cotta Company, makers.
A. A. Richter, Architect.



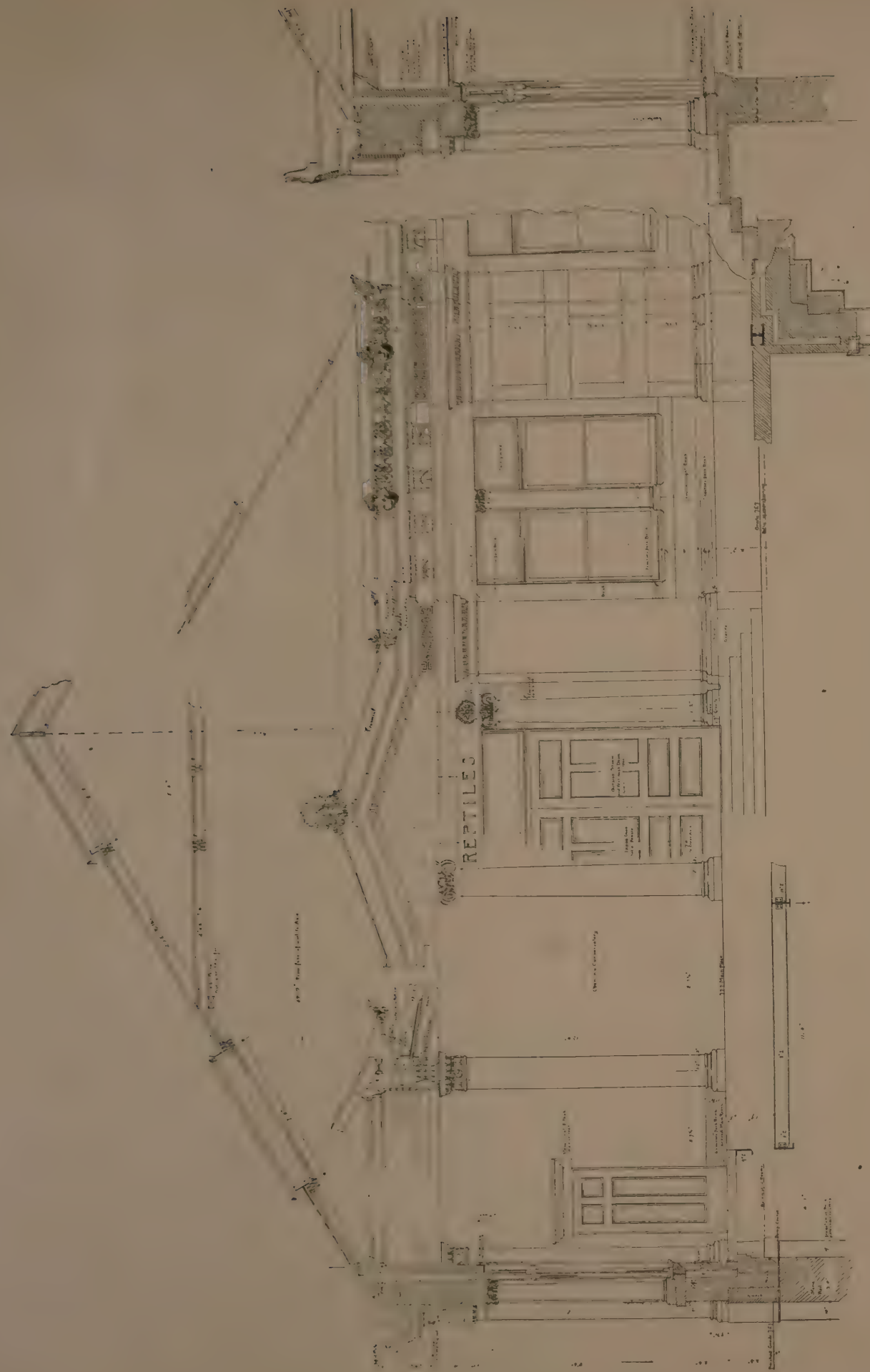
FIRST FLOOR.



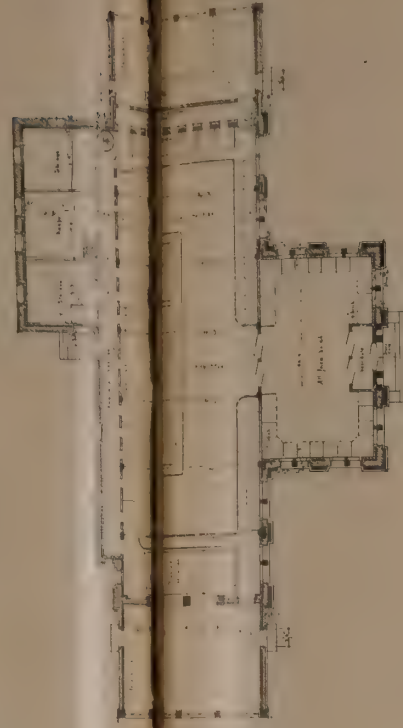
SECOND FLOOR.



ATTLEBOROUGH MASS.



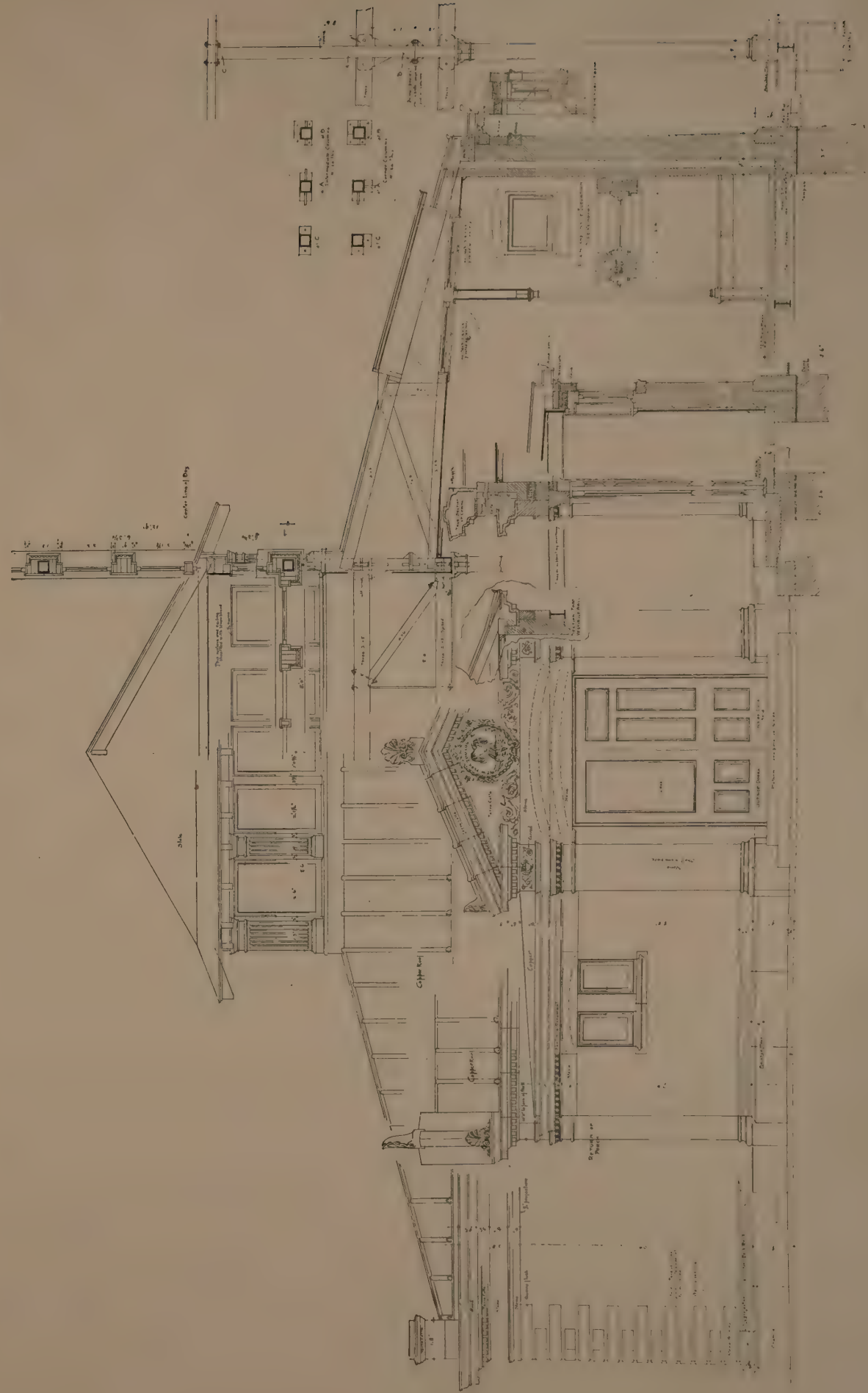
DETAIL, FRONT ELEVATION, REPTILE HOUSE, BRONX PARK, NEW YORK CITY.
HEINS & LA FARGE, ARCHITECTS.



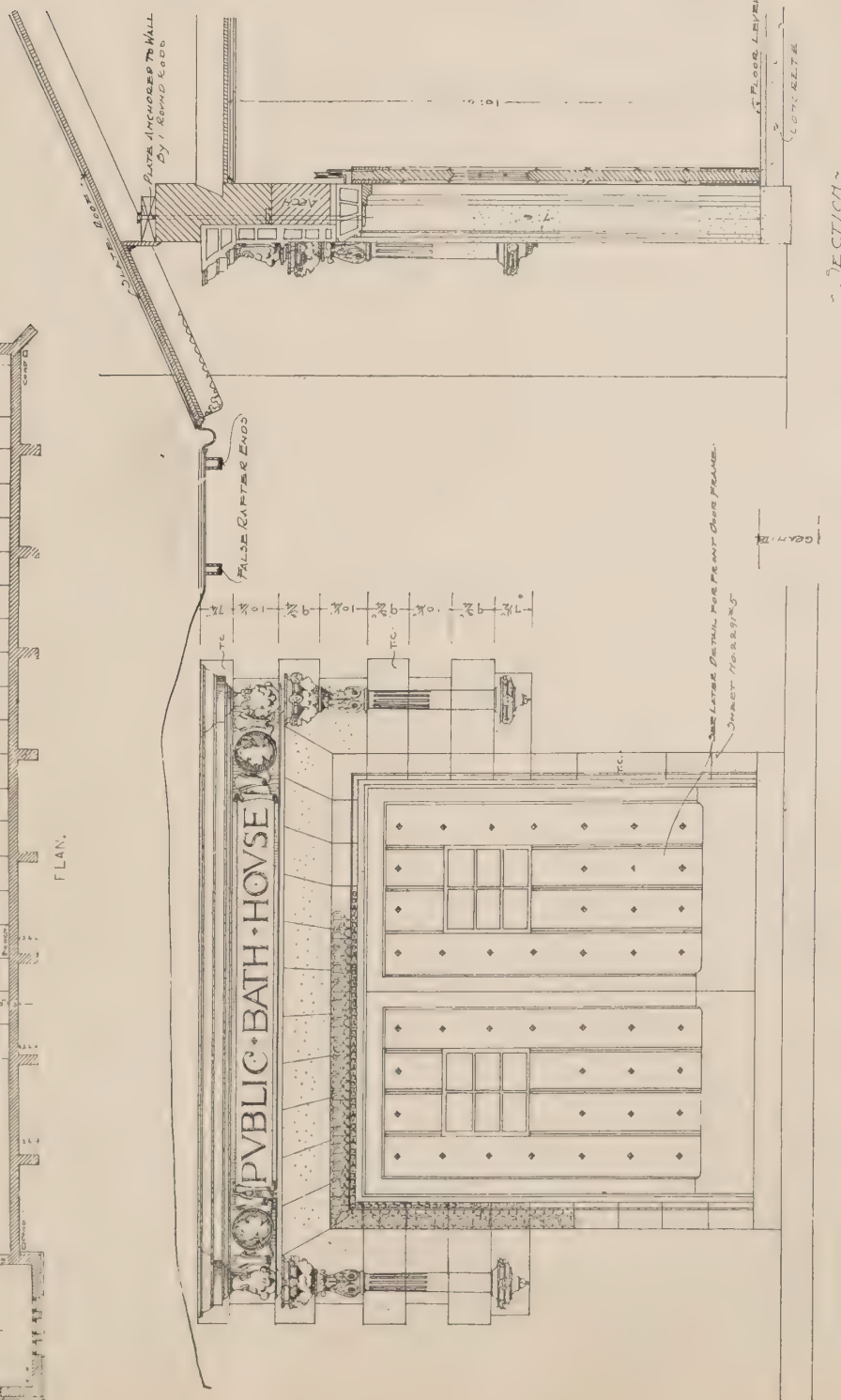
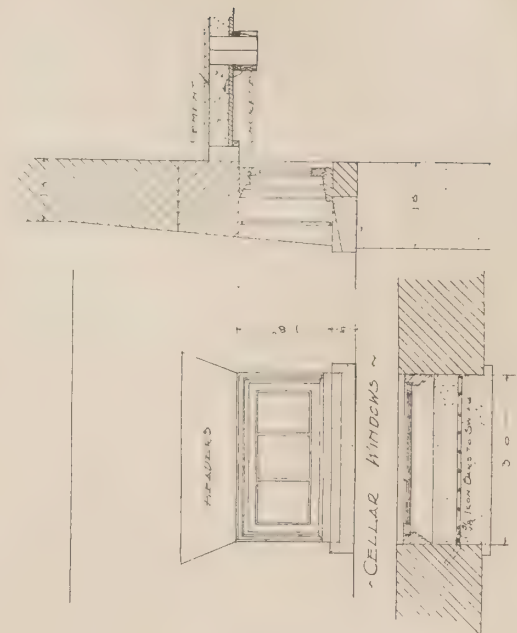
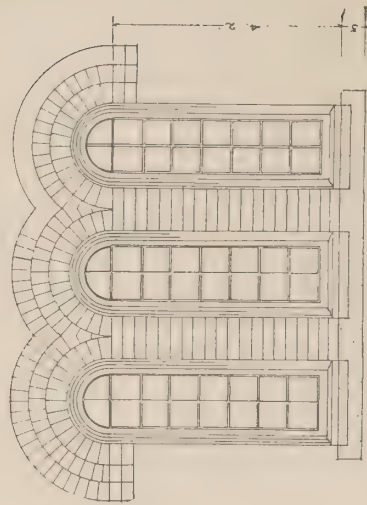
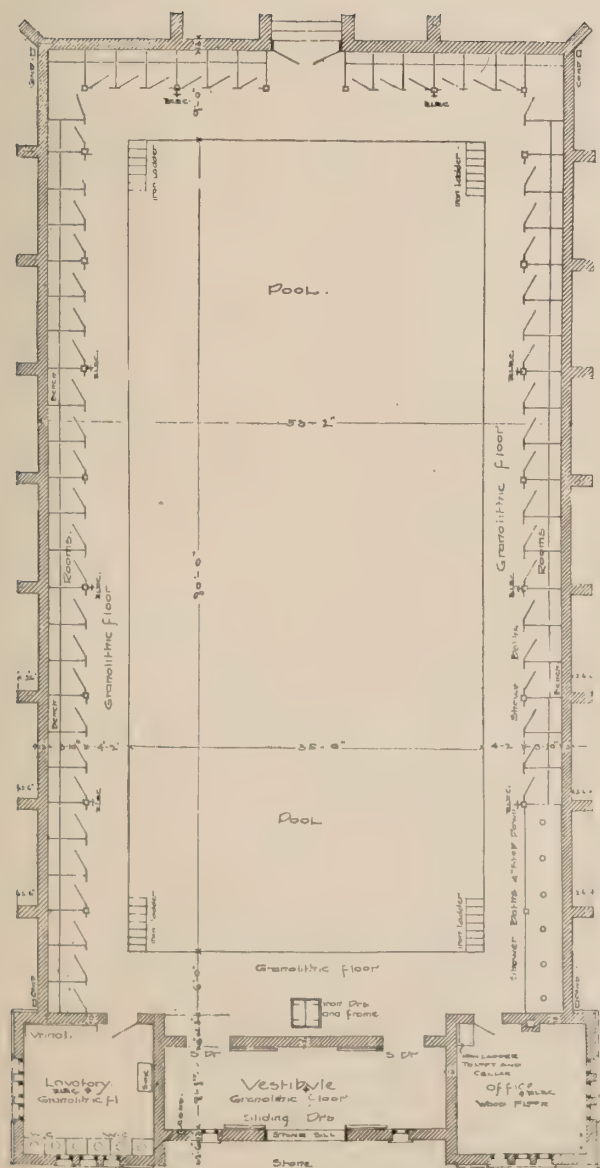
FLOOR PLAN, REPTILE HOUSE.



FLOOR PLAN, BIRD HOUSE.



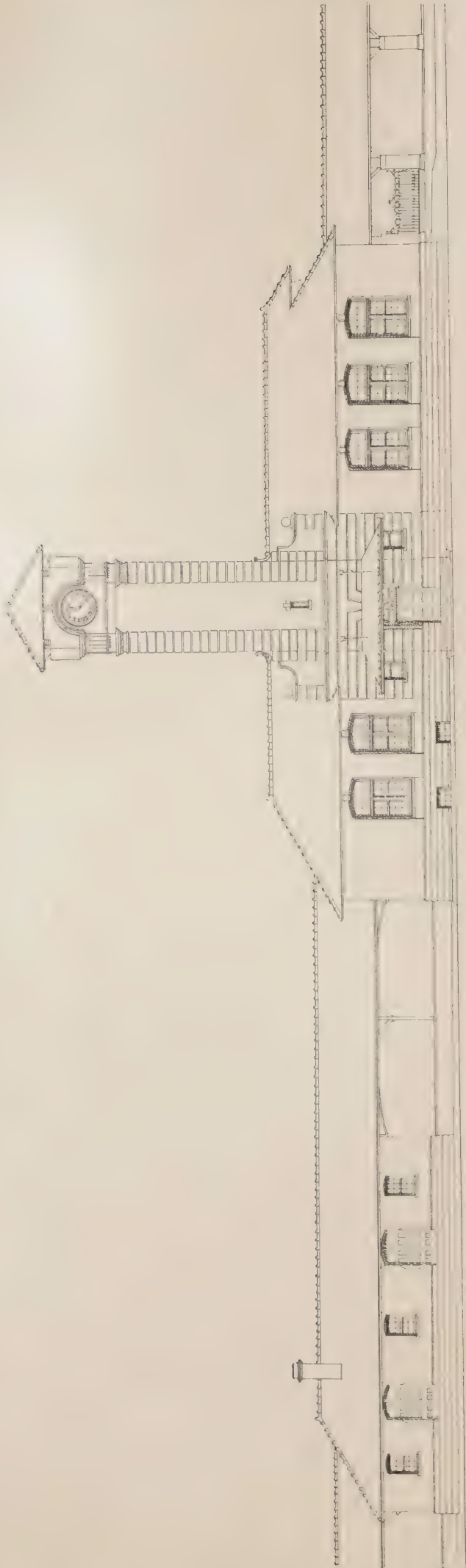
DETAIL, FRONT ELEVATION, WINTER HOUSE FOR BIRDS, BRONX PARK, NEW YORK CITY.
HEINS & LA FARGE, ARCHITECTS.



FRONT ELEVATION ~

DETAILS, BATH HOUSE FOR THE CITY OF PHILADELPHIA, PA.
HAZELHURST & HUCKEL, ARCHITECTS.





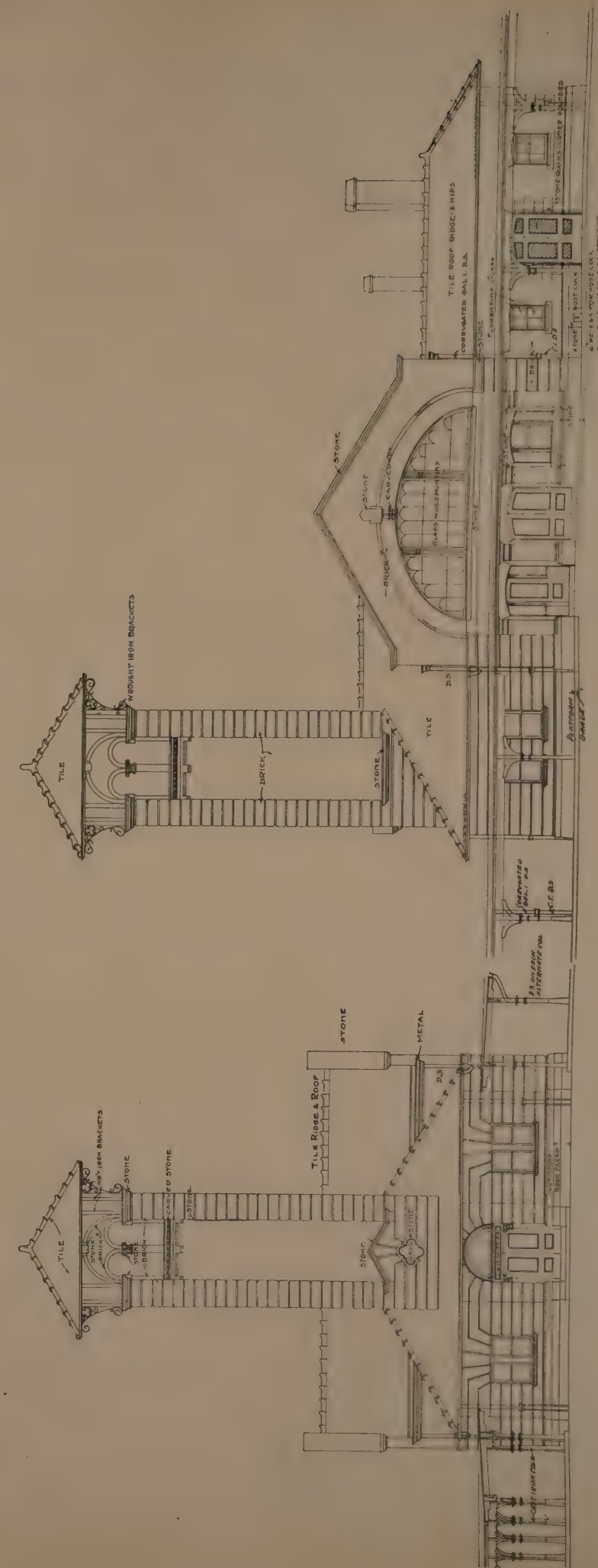
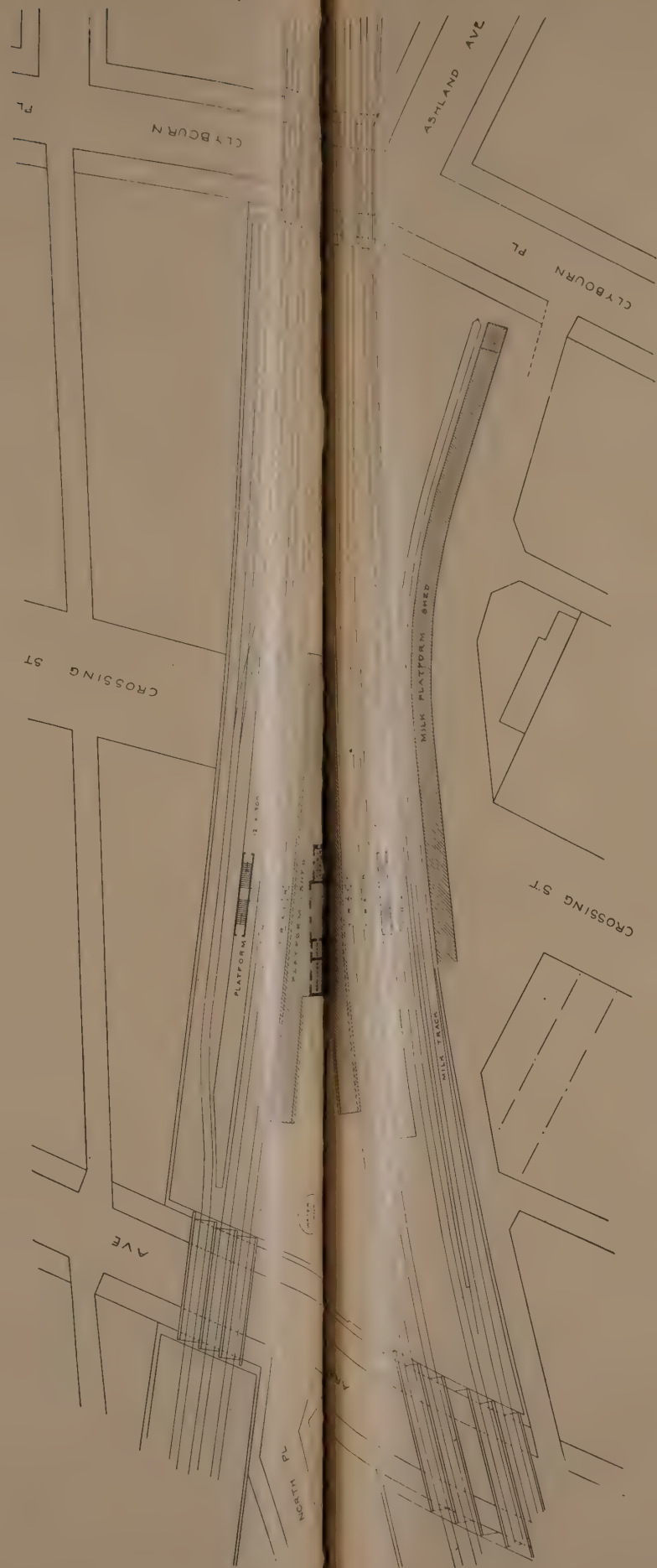
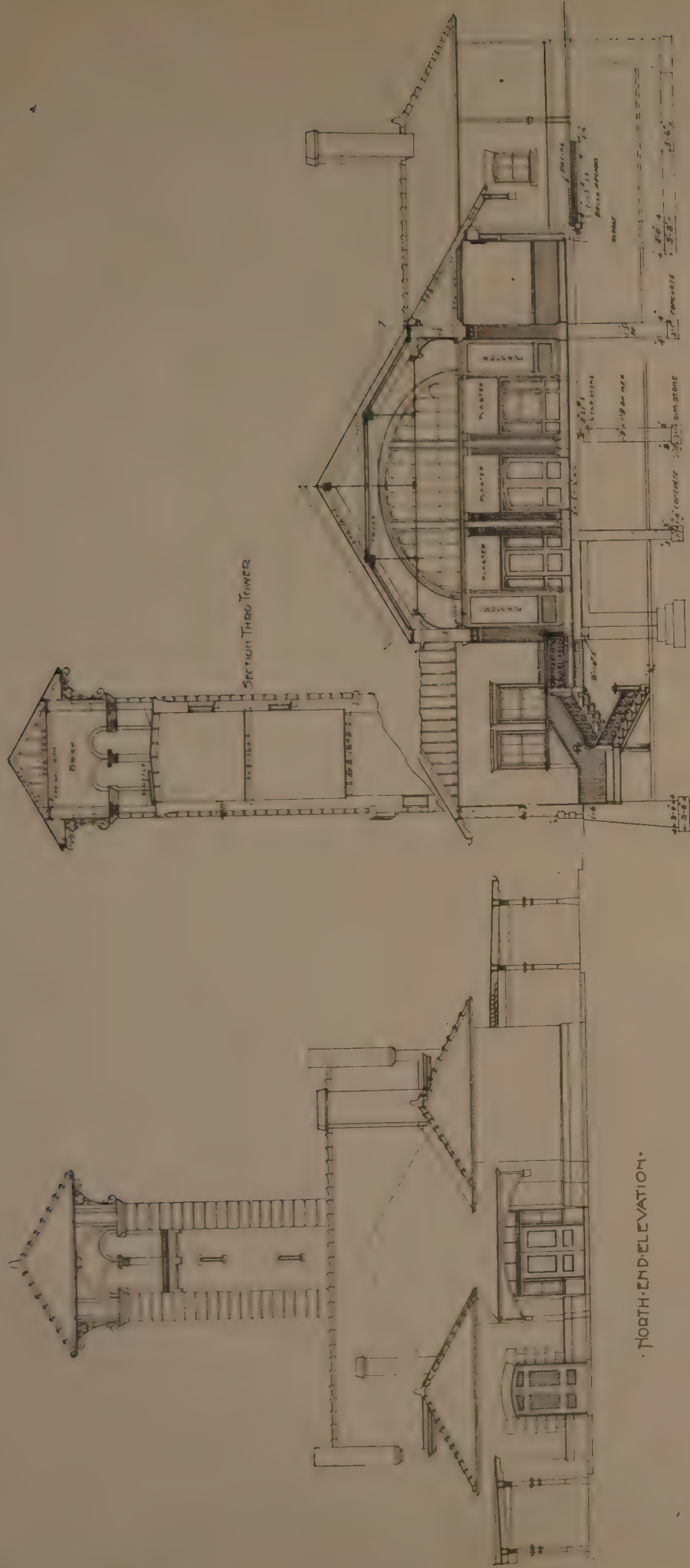
ELEVATION



PLAN

STATION AT BELOIT, WIS., C. & N. W. RAILWAY.

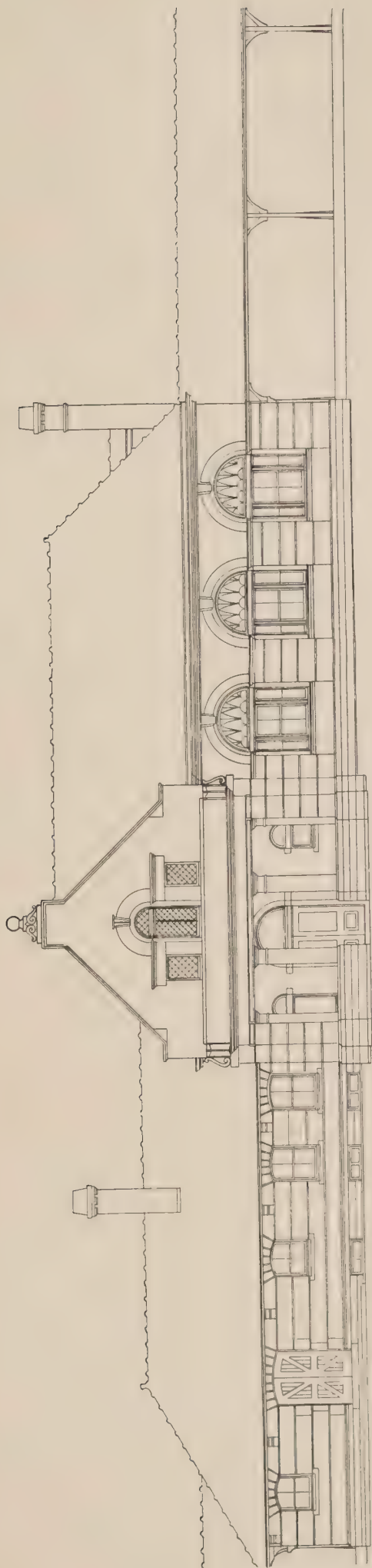
FROST & GRANGER, ARCHITECTS.



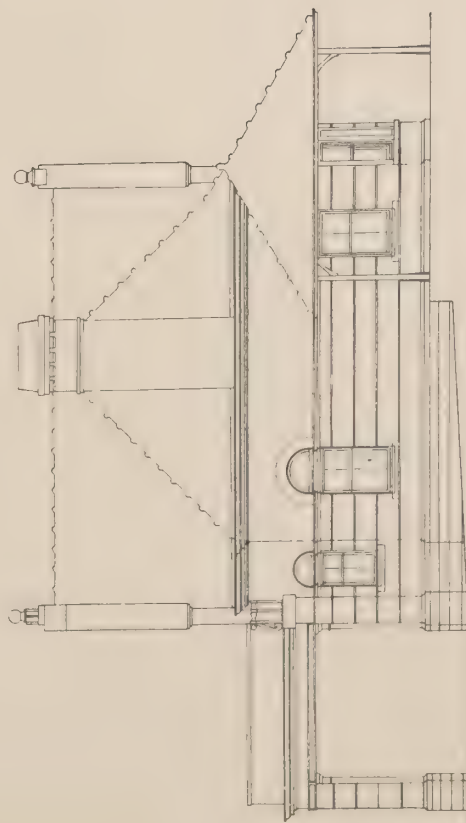
STATION AT CLYBOURN JUNCTION, ILL., C. & N. W. RAILWAY.
FROST & GRANGER, ARCHT'S.

• FRONT ELEVATION •
• EAST-SIDE ELEVATION •
SCALE 3/4" = 1' FOOT





^^ TOWN ELEVATION OF STATION ^^



^^ END ELEVATION OF STATION ^^

STATION AT HIGHLAND PARK, ILL., C. & N. W. RAILWAY.

FROST & GRANGER, ARCHITECTS.



SEE FOR FILLS OF NEW YORK CITY
Helen A. LaFayette

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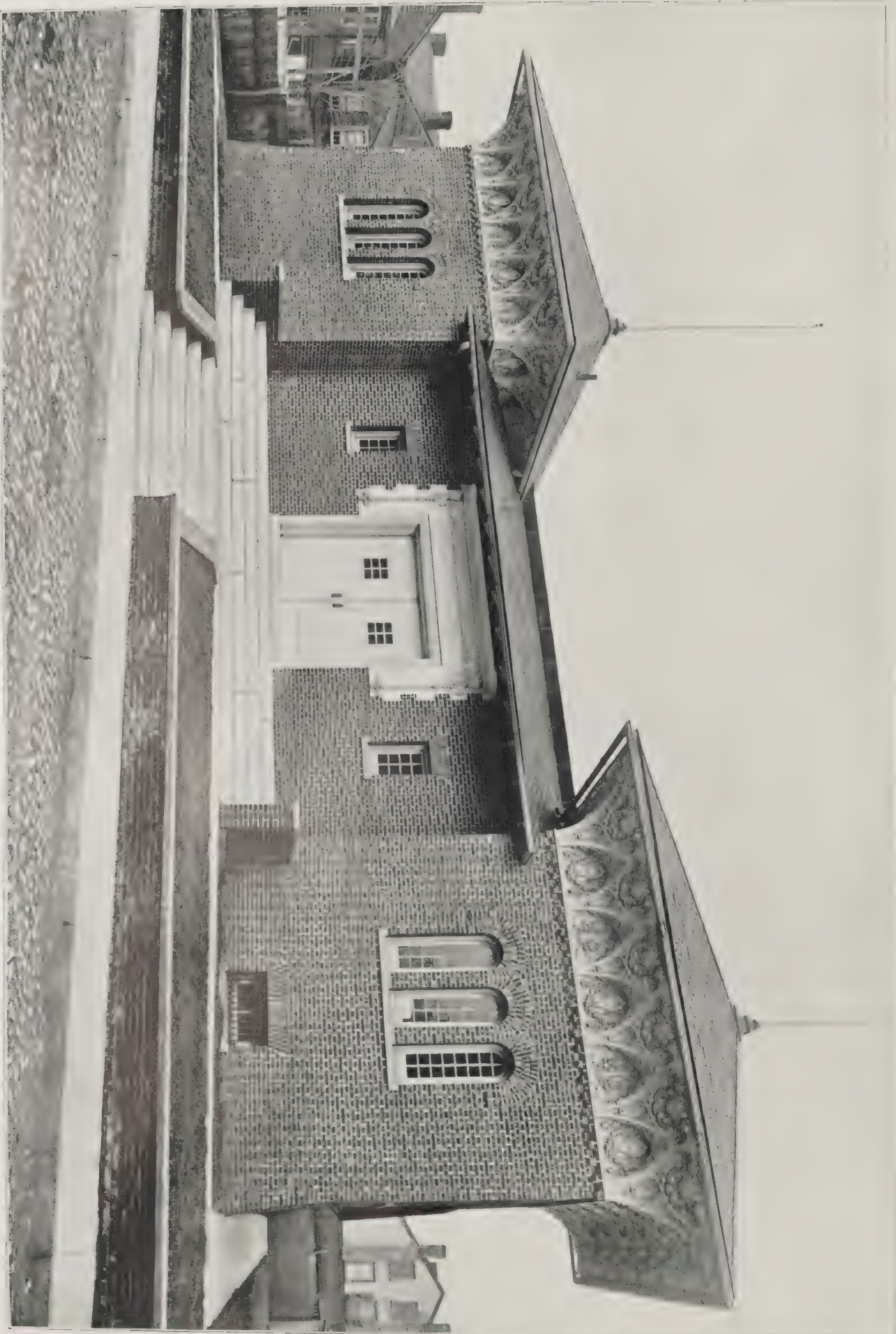
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THE BRICKBUILDER.



125 FIFTH AVENUE, N. Y. CITY

THE BRICKBUILDER,
JULY,
1900.



HAZELHURST & H. BUILDING FOR THE CITY OF PHILADELPHIA PA.

THE BRICKBUILDER,
JULY,
1900.



THE NELSON PAGE HOUSE, WASHINGTON, D. C.
MORRIS, MEAD & WHITE, ARCHITECTS.



A CITY LIGHT HOUSE, WASHINGTON, D. C.



THE BRICKBUILDER,
AUGUST,
1900.

BOSTON
PUBLIC
LIBRARY



VIEW ON THE ROAD FROM SALERNO TO AMALFI, ITALY.



THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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Advertisements will be printed on cover pages only.

RESPONSIBILITY OF THE ARCHITECT.

IN a previous number we made some comment on the competition for the Atlanta Masonic Building. We have since then had occasion to notice some decisions, which have been made by courts, confirming the principle of the owner's liability if he fails to select a competent architect. Many property owners seem to feel that if an architect is employed he can be held responsible for what happens, no matter whether he is fitted to practise his profession or not. This view is not, we are happy to say, sustained by the courts, which have recognized the architect primarily as an adviser, and have decided that if an owner is not wise enough to pick out a good adviser, he has no one but himself to blame when the results of the advice, which he so obtained, are not satisfactory. Decisions of this kind decidedly make for good architecture. There are plenty of standards by which the most uninitiated layman can make at least a fair selection of an architect. Personal honesty and business ability are qualities which are very speedily manifested, and can very quickly form a part of an architect's current reputation. His artistic ability can be measured by what he has actually done, and if a prospective client chooses to be guided chiefly by whether an architect is a hail-fellow-well-met, or will work cheap, he deserves to get in trouble, and generally does.

THE English-Portland cement held a high place in public favor for many years, and there were some constructors who used to claim that it was not possible to manufacture really first-class Portland anywhere except in England. But a protective tariff and large opportunities have changed all that. The English article has almost gone out of the market, and German cements have very largely taken its place, but these in turn are being supplanted by our own manufacture. It was not so very long ago that reliable American-Portland Cement was almost unknown. The early brands were unevenly mixed and badly ground, while the limited sales left small margin for experimental development, but persistence and constant improvement was sure to win out, though it has required both faith and works on the part of our manufacturers and investors. At present an immense amount of capital is applied in this line in the United States, and the quality of the product is such as to rank with the best of the foreign output, the American Portlands being given first choice by many of our best constructors and architects. The continued use of the German cements is, we believe, largely due to the fact that the output of the American mills is limited and cannot yet fully supply the enormously increasing yearly demand, a condition which is, however, fast changing for the better.

But it can by no means be inferred that all American Portlands are of equal quality. To the popular mind, the term "Portland" as applied to cement carries with it the idea of something which is supposed to be above suspicion, and advantage of this has been taken by some unscrupulous manufacturers to put out a product which they dubb American Portland, and which, somehow, seems to find a ready sale on the strength of its name, though its quality is so poor that it would not be passed by any sort of test, and it is far below the average of the poorest of the foreign cements. The mere name of Portland is no longer in any sense a guarantee of quality, and with this, as with nearly every largely used building material, the safest course is to confine the selection to a few of the well-known and thoroughly tested and accepted cements.

Concrete, when properly prepared, is a most excellent building material, upon which great reliance can be placed, but as it is always mixed in place, and the work generally done by workmen who are more or less indifferent to the results, if not entirely ignorant of them, it is a composition which varies a great deal, and it is not wise to assume that an inferior cement can be so manipulated in the mixing as to compare a moment with the highest grades. There are far too few actual tests made right on the works to justify any experimenting with doubtful brands.

"THE BRICKBUILDER" COMPETITION. IV.
A CREMATORY.
PROGRAM.

THE crematory may be located either on flat or mountainous ground, or a rising slope with wooded background. All of the construction is to be such as is adapted to materials in burnt clay. The cost is not limited.

The function of the building is threefold: First, for the purpose of incineration; second, for the accommodation of those persons desirous of taking part in or witnessing ceremonies in connection with the incineration; third, for the preservation and display of commemorative tablets, monuments, etc., and of urns or vessels containing the ashes for incineration. The different parts of the design may be combined in one building, or grouped and connected with colonnades, etc.

The design should include the following features:—

CHAPEL, in which religious ceremonies may take place, should have pulpit; also catafalque where body may rest while the service is said; also organ and singing gallery or a chancel, and choir room and robing room for clergy. The chapel should seat at least five hundred people. RECEPTION ROOM for relatives and friends should be near the entrance to chapel, and have connected with it the following rooms: Office for registration, administration offices for trustees, toilet rooms. The incinerating department should be in direct communication with the chapel, and contain the following features:— RECEPTION ROOM for the preparation of the body, connected directly with the chapel and with the incinerating process by tramway, lift, or other apparatus to convey the coffin to chapel and incineration chamber. PHARMACY for restoratives, connected with above room. INCINERATING CHAMBER in direct communication with the chapel and with the furnace or other apparatus for generating the incinerating force, possibly directly beneath the chapel. Room for furnace or other incinerating apparatus, with accessory rooms for storage of oil, wood, distilled wood, material for liquid air, etc. Room provided with glasses in the wall, through which the relatives may view the incinerating process. VENTILATING CHIMNEY, if furnaces are used. LIVING ROOMS for attendants. COLUMBARIUM arranged with alcoves and balconies to multiply the surfaces for niches in which to place the ashes and urns.

DRAWINGS REQUIRED: A perspective sketch and sketch plans, showing the disposition of all the required rooms. To be rendered in black ink, without wash, upon a sheet measuring 15½ by 10 ins. Each drawing is to be signed by a *nom de plume* or device, and accompanying the same is to be a sealed envelope with the *nom de plume* on the exterior, and containing the true name and address of the contestant.

The drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before Oct. 1, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Mr. John W. Case, Detroit, Mich., has kindly consented to judge and criticize this competition.

VIEW ON THE ROAD FROM SALERNO TO
AMALFI, ITALY.

THE northern shores of the Gulf of Salerno, though less extensively visited by tourists than those of the Bay of Naples, are even superior to the latter in scenic grandeur. The high range of mountains which forms the Peninsula of Sorrento rises thousands of feet directly from the sea, sheltering in its crevices numerous maritime villages which, inaccessible by railway and in some instances by vehicles, preserve their mediæval characteristics intact. A good carriage road reaches from Salerno to Amalfi, beyond which it has been found impracticable to construct a permanent way, such portions of the road as have been built having been repeatedly destroyed by landslides, among which the disastrous one of last year is probably still fresh in our reader's memory. The view presented in our frontispiece is of Vietri, a small place on the road near Salerno, where the more savage portion of the scenery has hardly begun, and where level spots may still be found which are planted with lemons, olives, and vines. From the southern exposure of this coast it was particularly open to the ravages of the Barbary pirates, who made frequent and sudden raids, plundering the towns and carrying off the inhabitants as slaves. For defense against these pirates, the viceroys under Charles V. of Spain, under whose dominion the kingdom of Naples fell, erected a series of massive, square watch-towers at close intervals along the coast, one of which, with its corbelled and machicolated battlements, is seen on the beach in the center of the picture.

The outside walls of the houses are generally plastered a dazzling white, and the towers and domes of the churches often have a curious decoration of glazed and colored tiles. The Saracenic influence is strong in the architecture; and in the churches and cloisters of the monasteries are many examples of intricately wrought capitals and bronze and mosaic work. J. Addington Simonds, in his "Sketches in Italy," describes the scenery about Vietri as follows: "On first quitting Vietri, Salerno is left low down upon the seashore, nestling into a little corner of the bay which bears its name, and backed up by gigantic mountains. . . . On the left hand hangs the cliff above the deep salt water, with here and there a fig tree spreading fanlike leaves against the blue beneath. On the right rises the hillside, clothed with myrtle, lentisk, cistus, and pale yellow coronella, a tangle as sweet with scent as it is gay with blossom. . . . Meanwhile each turn in the road brings some change of scene: now a village with its little beach of gray sand, lapped by clearest sea waves, where bare-legged fishermen mend their nets and naked boys bask like lizards in the sun; now towering bastions of weird rock, broken into spires and pinnacles like those of Skye, and colored with bright hues of red and orange; then a ravine, where the thin thread of a mountain streamlet seems to hang suspended upon ferny ledges in the limestone—or a precipice, defined in profile against sea and sky, with a lad, half dressed in goatskin, dangling his legs into vacuity and singing—or a tract of cultivation, where the orange, apricot, and lemon trees nestle together upon terraces with intermingled pergolas of vines."

Brickwork of the Royal Chateaux of France. II.

BY WILLIAM T. PARTRIDGE.

THE Château de Maintenon, situated in a level country near the bank of the river Eure, depended for defense upon the strength of its towers and the depth of its moat. It therefore lacks the picturesque setting of Gien or Blois, both of which crown elevations. It gains



CHATEAU DE MAINTENON.

in effect, however, from the wide encircling moat, upon the surface of which its medley of towers is reflected.

Two great sentinel masses stand one on each side of the garden front. Between them lies the brick addition made by Louis XII. So many further alterations were

carried out by Louis XIV. that it is not easy to determine the exact extent of the work of the Gothic king. But what he constructed is much in the style of his work at Blois, though it is uncertain which château is the earlier. For example, Louis XII., in making this present change, left the principal towers and a small fragment of the



FACADE, CHATEAU DE SAINT-GERMAIN-EN-LAYE.

wall uniting them,—here, as at Blois, merely joining older parts by a wing. A chapel is at one end of the wing, and a staircase cage in the middle.

The material used, of course, is brick. There is some attempt at a diaper pattern; but the wall surface is too small for much display. The composition, controlled by the existing conditions, is very irregular. These conditions led to a picturesque treatment, which has been somewhat marred for us by the barn-like addition of Louis XIV.

With the Château de St.-Germain-en-Laye a new use of brickwork began. During the Gothic period brick was used for constructional purposes only. That is, the body of the wall was built of brick; the contrast of its color with that of the stone was merely accidental. Ornamental effects were obtained by patterns formed of bricks of different colors. But in St.-Germain-en-Laye the *color* of the brick is utilized. All architectural effects are

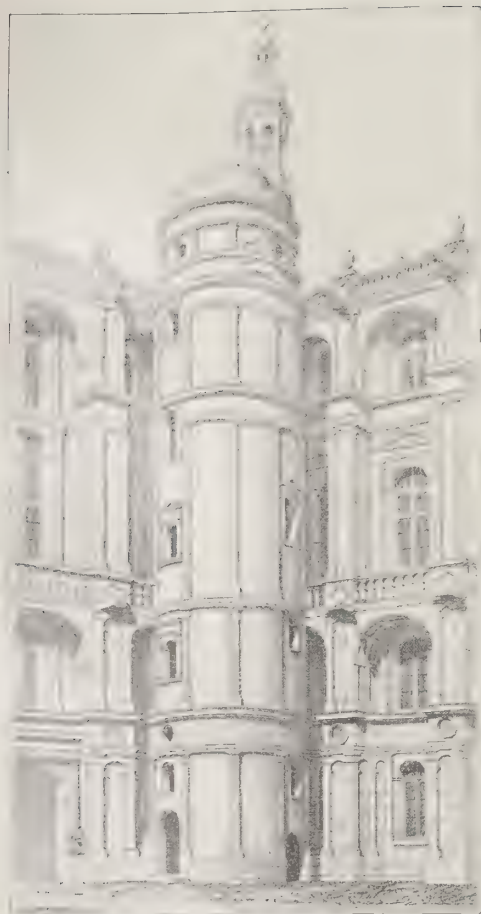


STAIRCASE, CHATEAU DE SAINT-GERMAIN-EN-LAYE.

worked out from this point of view. The body of the building is covered in great part with stucco,—another innovation. Against this light background stand reveals, pilasters, and string-courses of red brick, carried in narrow lines and used purely decoratively.

The composition of this building, built later than Blois, is a step in advance of the north façade of Francis I. in that château.

At Blois the recessed balconies are more or less regularly spaced in a thick wall, and have no relation to the court façade. The piers vary in width and are merely fragments of wall surface. At St.-Germain-en-Laye, on the other hand, these piers are structural, buttressing a large vaulted roof. The windows are deeply recessed, allowing space for balconies at the principal floor level.



SMALL STAIRCASE IN COURTYARD,
SAINT-GERMAIN-EN-LAYE.

piers on the exterior are carried down to a base, which is readily seen to be the lower part of an old *château fort*, with its machicolation, buttresses, and drawbridge still extant. On this exterior the difference in thickness between the lower fortress wall and its superstructure enables a continuous gallery to run across the principal or garden façade.

The cornices and sides of the characteristic buttresses are ornamented with narrow brick pilasters with molded caps and bases. The buttresses are joined at the top by arches not quite their full depth. By this arrangement all the vertical pilasters can extend to the cornice without interruption by the impost of the arch. The pilasters are coupled by a small arch, also of brick, flush with their faces, making a kind of small arcade applied to the pier. The window pilasters and pediments are of molded brick, and quite thin. The whole effect is that of a late Gothic building.

The flat roof — the only one, by the way, in a building of this period — gives small opportunity for ornamental chimney

This same treatment of buttressing piers and recessed windows appears in the courtyard, making the building a series of bays nearly alike from the exterior and from within the court.

In the internal angles of the courtyard, formed by the four wings so constructed, are circular staircases. On the exterior the modern restorer has terminated the façade with square, projecting pavilions. The

tops. Therefore, those here are practical rather than decorative.

The interior mantel and the hoods over the fireplace are interesting. They are built entirely of brick, excepting a single Gothic example at Rouen, the only instances of such construction generally known to have existed at this period. The high specimen in the Grand Room

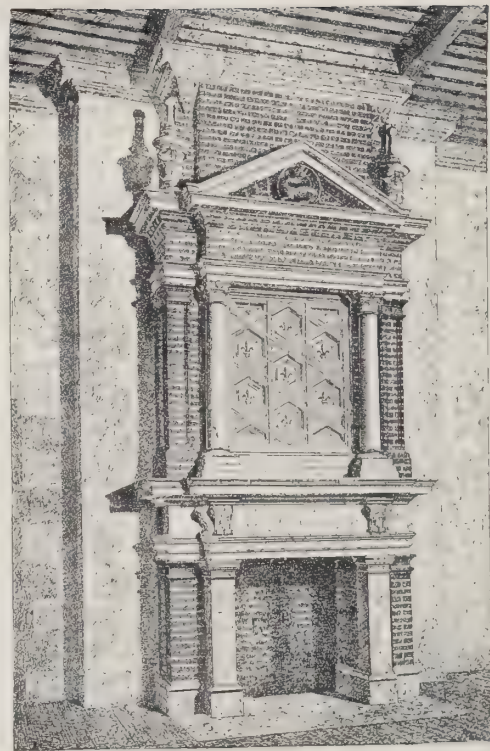
gains added distinction from its importance in the application of the Orders. The panels of the vaults and the pilasters of the staircase are of brick.

The brick additions at Fontainebleau are the service court, called the Cour de Henri IV., the Galerie des Cerfs and its pavilion, built also by Henry, and the new wing of the Cour de Cheval Blanc, constructed under Louis XV. Three wings built by Henry IV., abutting an older building, form the Cour de Henri IV. In mass, these three

wings make long lines of low one-story buildings, with attics, buildings marked at the corners and on the axes by higher pavilions. The center of the principal façade is composed of a triple mass, of which the central is the highest feature.

Although in plan all these wings and pavilions are of the same width, emphasis is given by an increase in the number of stories in the pavilions. Thus, the great middle pavilion has three stories and an attic; the minor central ones, as well as those at the angles of the court, have two. Each mass is roofed quite independently with a high, wedge-shaped roof. The central pavilion is set back some distance, and the space so formed is filled with a sort of semicircular niche. For a service court, the great entrance opposite this pavilion is imposing.

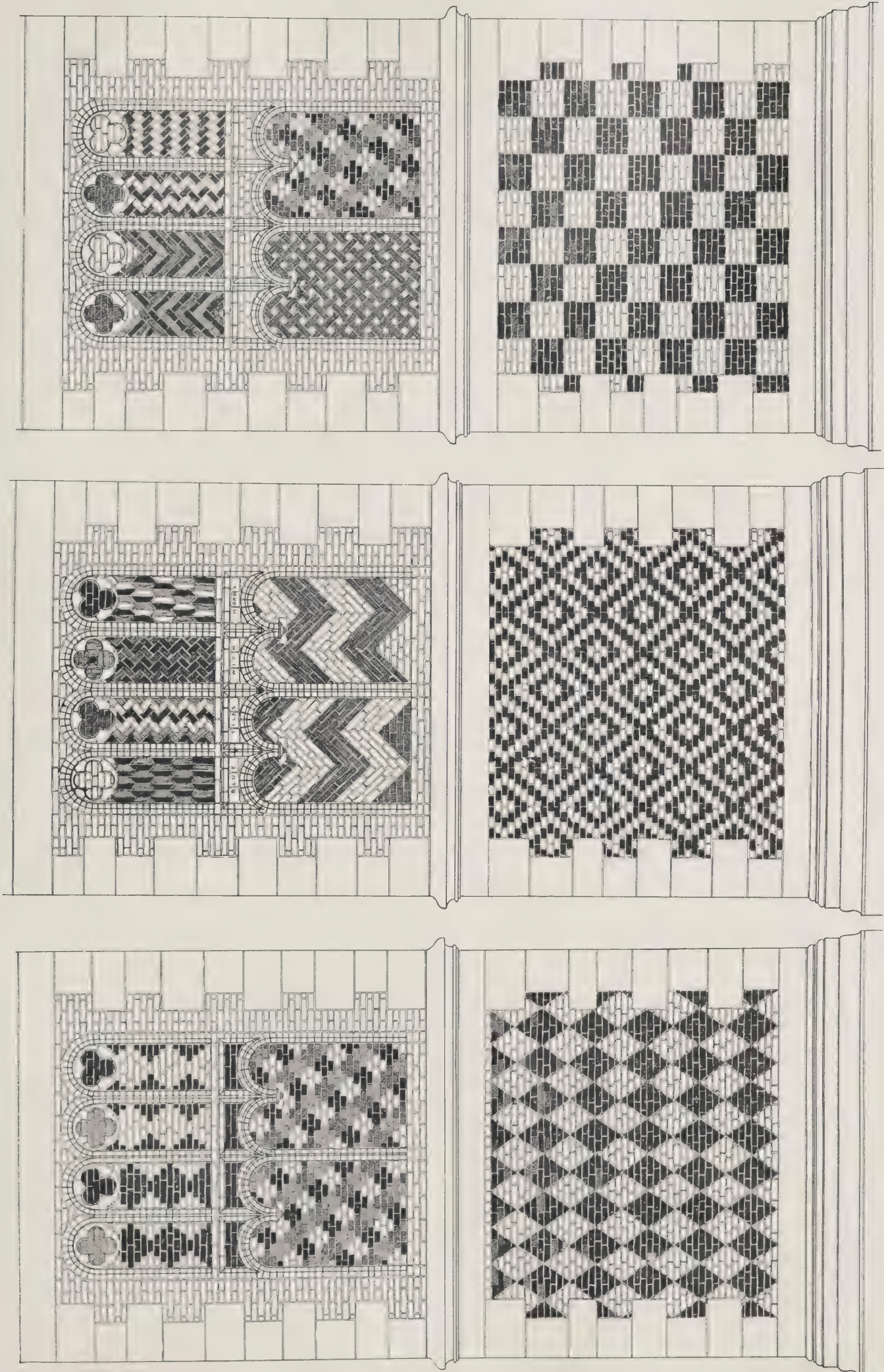
The material used is brick,



CHIMNEYPIECE, CHATEAU DE SAINT-GERMAIN-EN-LAYE.



COURTYARD ELEVATION, SAINT-GERMAIN-EN-LAYE.



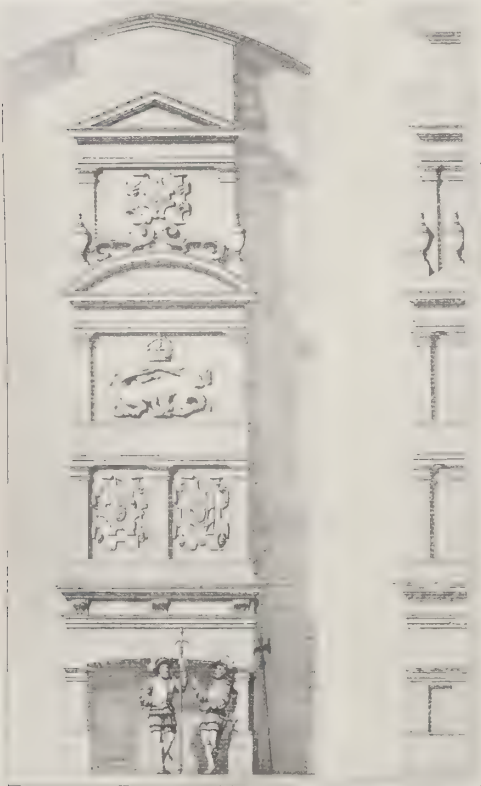
DETAIL OF BRICKWORK, COLOMBIER AT BOOS, FRANCE. WILL S. ALDRICH, DEL.

with stuccoed wall surface. As at St.-Germain-en-Laye, the exposed brickwork is used decoratively. The quoins and skewbacks are of stone; but all the architectural lines, cornices, sill-courses, and reveals are brick, contrasting prettily in color and texture with the light stucco. Even the lines of the mortar joint are taken advantage of and add a touch of decorative detail wherever brick is used. The main cornice is of brick; the block modillions are laid up in an ingenious fashion. The circular dormers frankly show the material, of which the jointing is a principal element.

The Cour de Cheval Blanc is not as picturesque a composition as that of Henri IV., but from the point of view of brickwork it is far more interesting. Very little stone is employed above the base course.

The use of the stone jamb inside the brick framework of the window is a unique method of enrichment. Then, too, the jointing of the string-courses, laid in alternate headers and stretchers on end, embellishes these bands nearly as much as would a dentil course. The design of the central brick dormer and the accuracy and delicacy of detail in the joints are most interesting.

The chimney, as our "History of Architecture" tells us, was for climatic reasons developed in France rather than in Italy. Here we are shown how much can be made of so utilitarian a feature; witness the miniature pilasters, three-quarter columns, and pediments which make the chimneys they adorn a decorative factor of the composition.



CHIMNEYPiece, CHATEAU DE SAINT-GERMAIN-EN-LAYE.

Another façade constructed by Louis XV. shows exactly the opposite use of the color of brick. Here all architectural lines are of stone, and the panels are of brick laid in Flemish bond. So little brick is used that we infer that color, rather than economy, must have been considered.

In the Gallerie des Cerfs a more interesting architectural treatment appears than in either of the service courts. Here are the important rooms of the château, adjoining the garden of Diana. Embellishments, niches, statues, and busts enter into the composition. The gallery takes its name from the trophies of the hunt, which once ornamented the interior of its upper section.



COUR DE CHEVAL BLANC, FONTAINEBLEAU.

They were removed when alterations were made by Louis XV. In this gallery were painted plans of the thirteen Royal Châteaux; but they, too, were covered by the hand of the re-decorator.

Two stories compose the gallery: the lower a classic arcade; the upper a high attic, with a dormer in every alternate bay. These dormers extend down through the attic; the panels between them are filled with oval niches. An arcade, flanked by similar though smaller motifs forming a kind of triple feature, marks the middle of the façade. A pavilion of the same character terminates the left-hand side.

Pilasters, cornice, and architrave are stone; brick forms the arches and imposts of the arcade and the panels and the jambs of the attic windows. The most interesting point, however, is the treatment of the niches, — jambs and imposts of stone, but backs and tops of brick. The brick joints are made to radiate from a central stone eye. The greatest care must have been taken in the molding of these bricks. The employment of brick in such a position affords a dark contrasting background to the



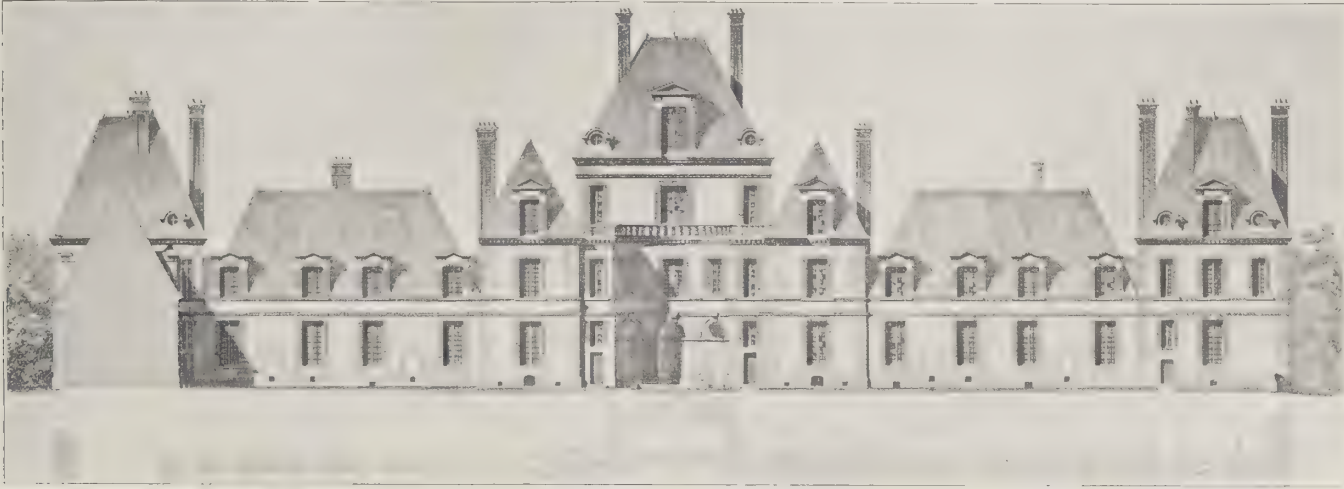
COUR DE CHEVAL BLANC, FONTAINEBLEAU.

light marble statues. The comparison of the Galerie des Cerfs with those of similar motifs built in the Gothic period shows how difficult it was for the later architects to free themselves from the older principles. In detail alone does this example differ from the brick court façade at Blois.

The additions to Versailles followed so closely upon the completion of the original building of Louis XIII.

associated with Versailles that it causes some surprise to learn that Louis XIII. and Jacques Lemercier are responsible for the original building, the present Cour de Marbre.

The buildings of this present courtyard Louis XIV. preserved, in spite of the unlimited means at his command and against the wishes of his architects. It is recorded of him, indeed, that when an architect de-



COUR HENRY IV., FONTAINEBLEAU.

that the structure as it stands shows fewer variations in style than are usually to be found in a French château.

Versailles had singular good fortune: First, it was built in its entirety within a single epoch, and then, although it was the very center of interest during the French Revolution, it suffered less than other châteaux at the hands of the revolutionists.

The names of Louis XIV. and Mansard are so closely

mandated as a vital essential to proper planning the demolition of the existing building, Louis replied that the building must then be rebuilt exactly as it had stood.

Until Mansard was commissioned to erect the chapel and wings associated with his name, the alterations that were made did not affect the appearance of the older building from the Paris or court side.

It was with the development of the garden that the use of brick became almost universal to France; and the Cour de Marbre—so called from the employment of



END PAVILION, GALLERIE DES CERFS, FONTAINEBLEAU.



GALLERIE DES CERFS, FONTAINEBLEAU.

marble in the paving of the court—was designed to face a garden. The ugly expanse of cobblestones on which it fronts at present makes but a sorry setting.

In plan, this brick building of Louis XIII. is a series of receding pavilions or wings that form an open court,

a feature in the general type of buildings of an earlier date. In consequence the sky-line is meager and uninteresting. Then, too, the roof of two slopes, commonly attributed to Mansard, lends further destruction to the sky-line, broken now by only a tall flag-staff and chimney-



GENERAL VIEW OF COUR DE MARBRE, VERSAILLES.

gradually narrowing as it approaches the central entrance. The original end pavilion can readily be discerned, marked by the little staircase turret in its angle.

The interior of the structure is a hopeless tangle of rooms and small courts, the uses of which can be apparent to none but a thorough student of the times for which they were built.

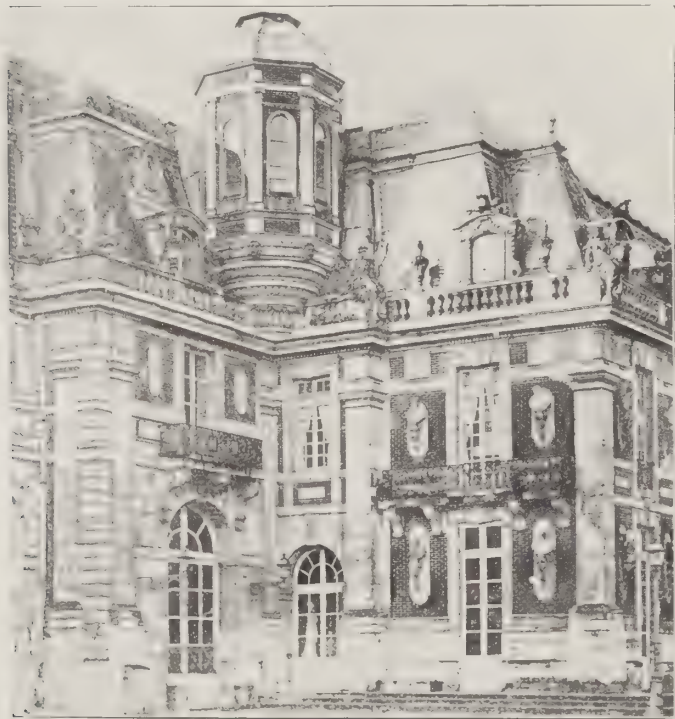
The exterior façade is of brick and stone. It follows the Italian fashion in showing a balustrade above the cornice, but combines with this effect the high French roof. A sacrifice is made of the chimney, so picturesque

pots that seem to protest silently against the destruction of an ornamental and useful feature.

But below the cornice line there is much of interest. The Doric order is used, its cornice supported at the



CORNER OF COUR DE MARBRE, VERSAILLES.



CORNER OF COUR DE MARBRE, VERSAILLES.

corner of each break by an angle pilaster. The bays so formed have each a single window in the middle save at the centers of the central motive and of the wings, where there are three. These windows break through the architrave and frieze of the entablature and extend down to the floor. They open upon balconies.

The height of the order is diminished by a high base-course through which the windows cut down to a stylobate of three steps.

The wall surface is of brick. This material fills the metopes of the frieze and the panels of the attic of the central feature.

The centers of the brick panels throughout the surface are marked by raised inner panels of marble, from which spring consoles supporting marble busts of the Roman Emperors. Upon the balustrade are allegorical figures actually *sitting* upon the rail.

The architraves of the windows return around the

base-course, and are flush with the string-course. The tænia of the architrave returns around the jamb and lintel of the upper window. The dentils of the cornice occur only as points of emphasis over the pilasters and windows.

The distribution of the masses of color has been carefully studied. This fact is apparent in the main cornice where the broad bands of stone would have been out of scale had the metopes been of the same material as the order.

There are some interesting variations in the composition of the angle pavilions where large openings occur. Here the frieze is omitted. The rustication in the corner and slight differences in the horizontal courses clearly indicate an addition. This rustication marks the corner of the terminal pavilion of the work of Louis XIII.

When we contrast this great effort, the Palais de Versailles, with the smaller buildings of the previous century, we find it wanting in that quality of composition that marked the well-nigh faultless work of the earlier builders. Whatever merit may come from a broken plan, the monotonous sky-line is nevertheless uninteresting, and the broken color of the wall surface, however attractive in a smaller building, here becomes unrestful rather than gay.

BUILDING ON STILTS.

THE character of the commercial buildings in our large cities often suffers from a false idea on the part of property owners and tenants that the vertical supports in the first story shall be reduced to the mechanical minimum required for absolute strength, without regard to the larger question of the appearance of strength in the exterior design. In other words, we are forced to boost our structures upon stilts and rest sometimes a twenty or thirty story building upon a couple of slender uprights and a big sheet of plate glass. This is æsthetically wrong, and our observation makes us believe it is practically unnecessary. While an abundance of light is desirable for every form of business, it is not reasonable to expect that one can do business with the same degree of illumination as if in the center of a large, uncovered field; and we have yet to see a case where a building that was designed with a proper consideration for the appearance of stability in the first story failed to rent well, or to give as much satisfaction to tenants as one which absolutely ignored the external effect.

The T Square Club Traveling Scholarship.

BY WILLIAM CHARLES HAYS.

OF the various organizations having as their purpose the promotion and practice of architecture and the kindred arts, the T Square Club is preeminent in the direction of endeavor to train its members in architecture by means of competitive design. In its earlier years, the young club, with its few but enthusiastic members, needed no incentive to produce excellent work other than the helpful criticism sure to be given. Those were the days when Wilson Eyre, Jr., John Stewardson, and Walter Cope were most effective workers in building the foundation. In striking contrast is the competition for the T Square Club Traveling Scholarship, the first holder of which, Mr. Lloyd Titus, sailed for Europe on May 19. The scholarship, lamentably small in money value (meaning but a few months abroad), is the reward of the past season's competitions in design.

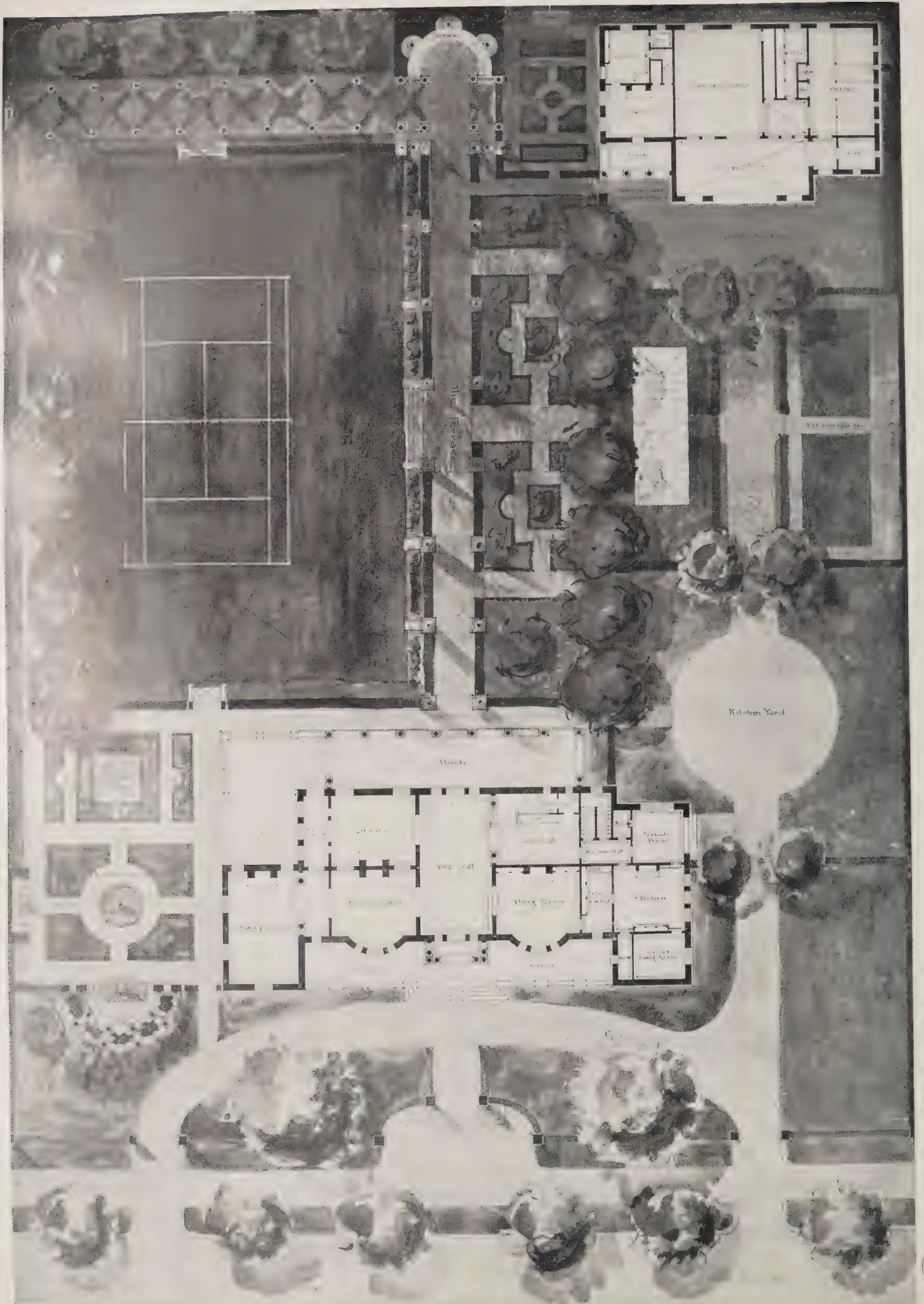
The conditions governing all T Square Club competitions are substantially these: Drawings are hung early in the evening, giving an opportunity for a preliminary examination before the business meeting. After usual routine, the president invites certain of the more prominent men present to conduct the criticism, though let it be understood that all members are urged to comment. The chief motives, indeed, of criticism and judgment are the bringing out of individual thought, and the development of powers of discrimination. Following in regular order, each design is carefully considered and analyzed, the author often making notes. There is also a general summing up by the leading critic, who comments on the conditions of the problem which were mandatory—the keynotes which should have given tone and character to the designs. The judgment is by popular vote. Regularly printed ballot forms, with blank spaces for first, second, and third places, are used. It is compulsory that each voter shall name three designs, incomplete ballots being excluded from the count. Designs voted first place receive three points; second place, two points; and third place, one point. The three mentions are then awarded in the order of the total count of points. In computing the standing of competitors in the entire year's work, a similar method is followed.

In the preparation of the programs of competition for the club scholarship, it was speedily decided: That the subject chosen should be one of the every-day problems of American practice, that local character should be emphatically required, and that the several problems should be so co-related as to develop a complete whole, at the same time reducing to a minimum the amount of actual work required each month. This last feature is indispensable, since the majority of our active participants have but little leisure time to apply to club work, being otherwise employed during the day.

The introduction to the programs for the year, as announced in the syllabus, contained the following: "As a result of the recent appropriation made to enable a member of the T Square Club to visit Europe annually for architectural sketching and study, a Traveling Fellowship has been established, and will be competed for in



ELEVATION OF A BAY IN COUR DE
MARBRE, VERSAILLES.



THE T SQUARE CLUB SCHOLARSHIP, PLAN OF WINNING DESIGN.
Lloyd Titus.



THE T SQUARE CLUB SCHOLARSHIP, PERSPECTIVE OF WINNING DESIGN.
Lloyd Titus.

the same manner as (and in lieu of) the gold medal for the highest average obtained in monthly competition.

preparation of the programs, with the hope of securing better and fairer results. In order to cultivate more



ELEVATION OF STABLE.
Lloyd Titus.

The Executive Committee realizes that the movement will mark an important step in the advancement of the club, provided that every member receives it in the serious spirit in which it has been conceived. While a higher standard might

be reached by the competition of a few strong men, the greatest influence for good will be attained only by having twenty or thirty men competing regularly, and the whole club entering into the spirit of the contest. The motive of the program is the first

effort to pursue the course advocated by the Architectural League of America toward a natural and national architecture. Upon the results of this experimental competition depends whether the award shall be increased or discontinued next year. In compliance with the expressed wish of the members of the club, these competi-

tions will involve no more work on the part of the competitor than in the past, although the committee, having this matter in charge, has given careful study to the

logical thought, it has been decided to give continuity to the monthly problems by relating the programs to one another, and they have been prepared with this end in view, as well as to make the series terminate with a general review. The syllabus is presented in such a manner as to form a sort of pocket memorandum, for notes and criticisms under each program. All drawings must be signed, and the last one re-entered at the following meeting, corrected or not corrected, as



EXEDRA.
Lloyd Titus.

the competitor sees fit. Thus, after a member has competed once, at the succeeding meeting he will enter an old and a new drawing, and in the last competition he will enter his entire set. Awards will be decided by the usual vote of the active members present, and each problem will be considered in the same class in making up an



ELEVATION OF THE HOUSE.
Andrew J. Sauer.

average of the mentions for the year." In the terms of the program, there were

"GIVEN. A nearly level semi-suburban plot of



ARRANGEMENT OF TERRACE STEPS AND WALL FOUNTAIN.

Andrew J. Sauer.

ground in the environs of Philadelphia, 200 ft. front between party lines by 250 ft. deep, with access from the front only."

"REQUIRED.—A DOMESTIC ESTABLISHMENT.

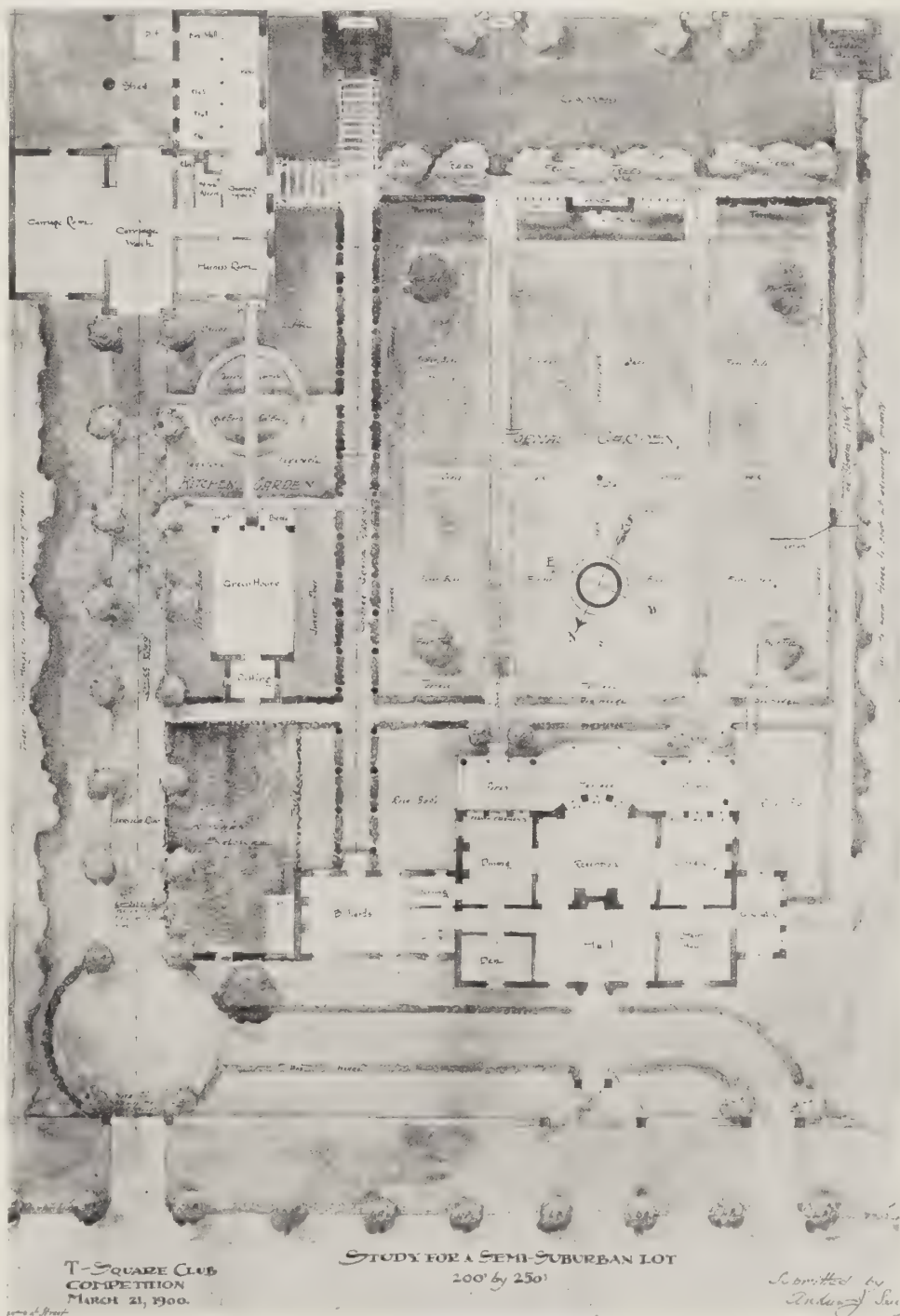
"The owner is a progressive and public-spirited citizen, proud of his Philadelphia lineage, and a punctilious respecter of the traditions of his native place. Therefore, he wishes his new place to be free from any suggestion of affectation or showy display, and especially desires that his architect shall give all the buildings an expression which shall be as local and indigenous as may be consistent with the best forms of contemporaneous building and design. The buildings, which are to be erected from time to time, are to include a large modern house for a family of eight, and such outbuildings and accessories as are becoming and natural to a man of taste with a growing family."

ALBERT KELSEY,
WARREN P. LAIRD,
WALTER COPE,
Committee.

The first competition required: "A Block Plan at $\frac{1}{8}$ in. scale of the entire property, including the sidewalk and one half of the street, to show the house and outbuildings and the general lay of the grounds. First, the estate should be considered in its relation to the community as a whole, and, second, it should be so disposed as to provide as great an amount of isolation as possible, while at the same time contributing to the openness and beauty of the public thoroughfare. An ordinance already exists requiring all buildings to be set back at least 25 ft. from the building line. Rendering optional. Note.—Each design should be well supplemented by explanatory notes written or printed in the margin of the drawing."

The actual number of drawings submitted, eighteen in all, was disappointingly small, but a high standard of excellence was set. In the general criticism, great stress was laid upon the requirement that the estate should be so disposed as to contribute to the "openness" of the thoroughfare. This interpretation virtually placed *hors de concours* several most interesting designs, in which the houses were placed far back from the road, with walled gardens,—such gardens being considered "shut in" and not

in harmony with local spirit and tradition. Among these designs was the plan by Wetherill P. Trout, here repro-

REVISED GROUND PLAN.
Andrew J. Sauer.

duced. In most of the drawings submitted, the various buildings were well disposed, in reference to exposures. This was especially noticeable in those of Messrs. Titus, Trout, and Hill. Several schemes showed ill-considered circulation, with gardens not easy of access, complicated arrangements of driveways, and omissions of proper service facilities.

Designs were submitted by Messrs. Titus, Sauer, Watmough, Hill, Trout, Wise, Leisenring, Bissell, Potter (2), Hokanson, Swales, Miles, Powers, Klauder, and three unknown. First mention, Lloyd Titus; second mention, Ira M. Hill; third mention, Herbert C. Wise.

The second competition required: "First and Second Floor Plans of the House at $\frac{1}{8}$ in. scale. Rendering optional." There were twelve designs submitted, the mentions being awarded as follows: First, Richard L. Watmough; second, Wetherill P. Trout; third, I. M. Hill.

The third competition required: "Two Elevations of the House (front, and one side) at $\frac{1}{8}$ in. scale. Rendering optional. Marginal notes to explain quality and color of materials." Ten designs were hung. Andrew J. Sauer won first mention; I. M. Hill, second mention; W. P. Trout, third mention.

The fourth competition required: "First Floor Plan, and Two Elevations of Stable, at $\frac{1}{8}$ in. scale." Eight drawings were in competition, and the places taken were: Lloyd Titus, first; A. J. Sauer, second; I. M. Hill, third. Before this competition several of the strongest men had discontinued, owing to first misconceptions of the program, and the natural desire to avoid the making of radical changes from the preliminary plans. Hereinlay the weakness of the scheme of closely related programs.

The fifth competition required: "Drawings at $\frac{1}{8}$ in. scale of such of the Out-buildings and Accessories of the competitor's scheme as he may care to amplify. Also details at $\frac{3}{4}$ in. scale of the most important architectural elements of the design. Rendering optional." Messrs. Titus and Hill (each with six credits), Sauer (with five points), and Watmough (three points) alone entered this competition. Mr. Watmough was awarded first place. Mr. Titus was second, and Mr. Hill was third.

The sixth competition called for: "A Revised Plan, on Whatman paper, at $\frac{1}{8}$ in. scale, of the entire estate, including sidewalks and curb, showing new arrangements of buildings and garden as minutely as possible. To be rendered in wash, monochrome, or color." The same four men were represented, and mentions were in this order:

Sauer, Titus, Watmough. Mr. Walter Cope led the criticism. The plans had been greatly improved since the first sketch, that of Mr. Sauer being open to but little criticism. Mr. Titus showed a very short avenue of maple trees, dividing his gardens very unpleasantly. (In a subsequent revision this feature was removed, to the vast improvement of the scheme.)

The seventh competition required: "A Bird's-eye View Perspective of the entire estate (rendering in line). The point of view to be taken at an elevation of about 100 ft. from a point which will best show off the competitor's design. This drawing to be neatly presented, with border lines, and a clearly printed title, — 'Final drawing submitted in the T Square Club Fellowship Competition.'" There were three designs: Mr. Titus receiving first mention; Mr. Watmough, second; and Mr. Sauer, third. Mr. Frank Miles Day conducted criticism.

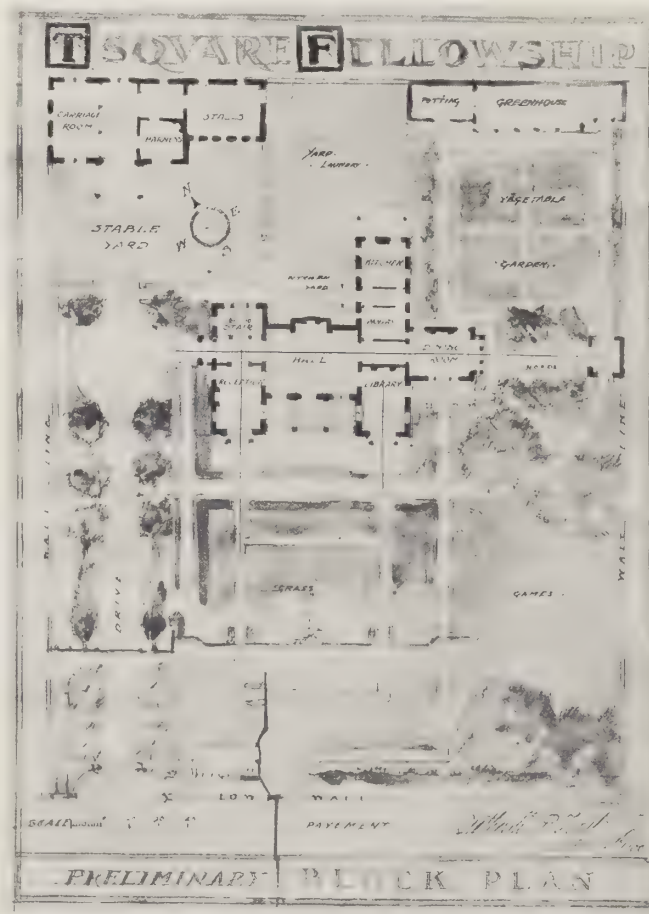
The total points scored by each competitor were: Mr. Titus, thirteen; Mr. Sauer, nine; Mr. Watmough, nine; Mr. Hill, seven; Mr. Trout, three; Mr. Wise, one. (The two last named competed in the first three competitions only.) Mr. Lloyd Titus, therefore, was announced as the winner, with Andrew J. Sauer and Richard L. Watmough equal honorable mentions.

A résumé of the criticisms offered, relative to the winning design, follows: "The house is well placed to secure privacy in the living portions, and the exposures are well studied, with morning sun in the dining room and best bed rooms. The family porch and terrace, also the library, overlook the tennis lawn, and enjoy the sunsets. There is an attractive vista from the dining

room, through the reception room and drawing room, to the rose bower and fountain. The entrance terrace is meager. The arrangement of dining room, pantry, and kitchen is faulty, a scullery being essential in houses where the pantry forms the communication with the kitchen.

"The stable plan shows a congested carriage house, from which a tortuous way leads to an ill-ventilated group of stalls. The arrangements for gardener and coachman are good. The elevation is much superior to the plan. The great entrance archway, with hay doors above, is well designed.

"The relative positions of house and stable insure freedom from odors, the prevailing winds, except in winter, being southwest. The stable is not very easy of access



PRELIMINARY BLOCK PLAN.
Wetherill P. Trout.

from the house. A pleasing disposition of sunken lawn for games and raised flower beds, between which is the long axial pathway, terminating in a well-conceived yew bower. The arbor at the southeast and the shady walk at the southwest are attractive. The formal arrangement of statues and seats, with high-cut hedge forming the property border, though well designed, may be criticized as inappropriate to our climate, and not expressive of our simplicity of living. The rose garden is a pleasant place, with its fountain, lily pond, and exedra. The latter, with growing plants, between concentric semi-circles of columns, is a charming thought, but perhaps is placed in too exposed a situation. "The scheme, as a whole, is a trifle too formal, but expresses well the station in life of its owner. The final review shows a marked improvement in the successive steps of this design. Mr. Titus, profiting by criticism, has shown much discernment, and has excelled in a general grasp of the conditions most important in the problem."



ELEVATION OF THE HOUSE.
Richard L. Watmough.

"Mr. Andrew J. Sauer's design is the plan of a house inadequate to the needs of an owner as described in the program. It has, further, a serious fault in its basement kitchen and service. In elevation, this house surpasses its competitors in that quality of 'local character' so emphasized in the requirements. In the ground plan, possibly an undue prominence has been given to the formal garden. The various gardens are well placed, but the kitchen garden and greenhouse lack relation to the formal garden. The raised green for games at the extreme south, with its border of fruit trees, is attractive, and the arrangement of small terrace, seats, and fountain is a fascinating bit of detail. The stable plan is one of the best submitted. The driveway, parallel to the street and passing by the front door of the house, was adversely criticized, as was the monotonously long covered arbor. The trees on property lines, to shut out adjoining estates, secure a considerable degree of privacy."

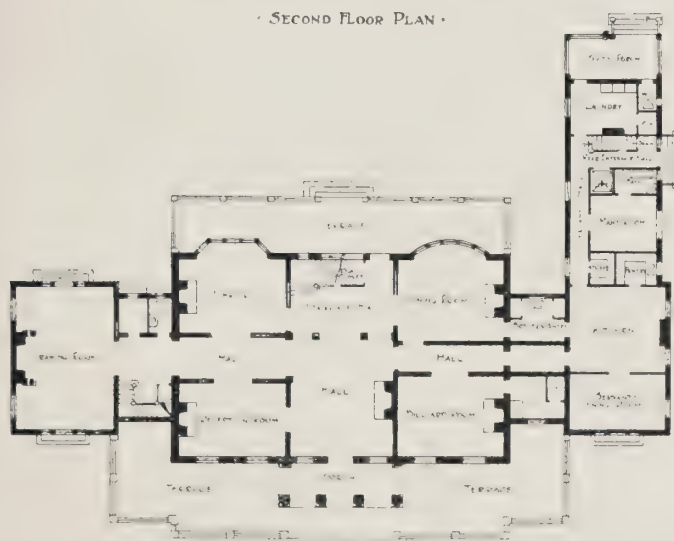
"Mr. Richard L. Watmough excelled in the design of the house. It is a house meeting the requirements of the owner in greater degree than any others. It is dignified, conveniently planned, and provides ample room with little wastefulness. The exterior is well disposed in mass, simple and chaste in detail, and has local character. The placing of the dormer windows in the roof and the narrowness of the front terrace at the portico have been remarked."

The results of the competitions have demonstrated the wisdom of the innovation. The standard of work has been high, the club meetings have been well attended, and a spirit of seriousness and interest has prevailed. It is very earnestly to be hoped that the scholarship may be continued a permanent feature of the year's work, with a possible improvement in the programs by somewhat differentiating the problems, to the end that participants meeting with scant success at first may not be prevented by discouragements from deriving the greatest benefits possible, in latter contests.

Mr. Titus, the winner, is fundamentally a T. Square Club man, not having had the advantage of academic training in architecture. He has been an indefatigable worker in design, and has won many mentions. Last year he received the gold medal of the club. He has twice been honorably mentioned in competition for the John Stewardson Memorial Fellowship.



• • • • •
SECOND FLOOR PLAN



FIRST FLOOR PLAN

T SQUARE CLUB SCHOLARSHIP COMPETITION. PLANS OF
THE HOUSE.
Richard L. Watmough.

Fire-proofing.

SOME INCONSISTENCIES IN MODERN FIRE-PROOF DESIGN.

BY J. K. FREITAG.

(*Concluded.*)

THE prevalent use of stone and marble may also be cited as among the familiar misuses of incombustible materials. Strictly speaking, the use of granite and marble especially should be avoided in any structure where the combustion of its own contents, or the combustion of any neighboring structure, would produce a temperature sufficient to destroy these materials. Such limitations, however, are generally overbalanced by the architectural requirements of the exterior treatment. It would certainly be unfortunate for the appearance of our cities if all granite and marble façades were abolished because subject to possible injury by fire, and yet the cases of the Chicago Athletic Club building, with its beautiful sandstone front completely destroyed above the third floor, and the Home Insurance Building in New York, where the marble front had to be largely replaced, testify to the cost of reconstruction where such materials are employed and subjected to severe test conditions. This danger, however, will gradually grow less as the interior finish and contents receive more consideration, and as our cities become more and more fire-proof as a whole, — communities of fire-resisting structures, rather than conglomerations of commendable fire-proof buildings surrounded and menaced by highly inflammable and dangerous neighbors. But for use in important load-carrying capacities, where not reinforced or supported by approved fire-resisting materials, the use of granite, marble, slate, etc., must surely constitute an inconsistency in modern design. Isolated polished granite columns, often supporting great loads, may be cited as familiar examples, as well as the more frequent use of marble and slate stair-treads. It has been said that 90 per cent. of the staircases in modern fire-proof buildings would be found utterly unreliable in the event of fire, either for the escape of the inmates, or for the use of the firemen. If such stone treads are used, they should be placed *over* cast- or wrought-iron treads, which would then support the slate or marble even after disintegration.

As regards the features of fire-proof construction which are more popularly regarded as requisite, such as floor and roof construction, and the employment of proper materials, the tide of current practice and favor has undoubtedly turned for the better; but in our requirement II., viz., the general internal plan or design necessary to make structures fire-proof, independent even of the materials used, much of even greater importance remains to be done. Major considerations are largely overlooked for minor ones, and attention is diverted to trivial matters of detail while broader and more essential general features are left to care for themselves.

Vital principles independent of the materials employed

or of the equipment provided for extinguishing fire, comprise such questions as the subdivision of areas, interior light shafts, stairways, and elevator shafts.

The most noticeable cases of unrestricted floor areas occur in the so-called department stores, where the management seeks to secure large areas unobstructed by division walls, in order that the customers may be duly impressed by the extent and completeness of the store. This hazard is extremely difficult to overcome, as any attempt to subdivide the large areas to suit the various component departments would require constant change to care for the expansion and shrinkage of these departments under their varying needs of growth and season. The task of surrounding and effectively fighting a fire of large area is also a much more serious matter for the fire department, and for this reason a maximum undivided area in city buildings is usually prescribed by the city building ordinances, and by the fire insurance companies.

Division or curtain walls are nevertheless to be strongly recommended, and all openings connecting apartments separated by fire-proof walls should be provided with approved fire doors.

Office buildings, apartment houses, and hotels generally require little attention as regards the subdivision of large areas, but the proper insulation or protection of dangerous areas, such as boiler and machinery rooms, here becomes of the utmost importance.

The prevalent use of interior light shafts and open stair-well holes and elevator shafts certainly constitutes the greatest inconsistency to be found in present methods. With what care and attention are floor systems and column protection provided, and then, to light floor areas removed from wall windows, open light shafts are introduced, extending usually from the ground floor to the roof, where the area is covered by a large skylight; or, if this common evil does not exist, open stair wells and elevator shafts run through the building from basement to roof, forming continuous flues and the most effective means of communication possible between the various floors.

The following extract is taken from a valuable paper entitled "Light Wells and Other Vertical Hazards, as Found in Department Stores," by Mr. E. U. Crosby, formerly manager of the Underwriters' Bureaus of New England, now general agent of the North British and Mercantile Fire Insurance Company.

"The light well, as now arranged, may be considered the greatest vertical hazard, but there are others.

"The original small store had a stairway, the growth of which has kept pace with that of the building. We now find several stairways, at least one of which is apt to assume grand proportions and extend from basement to second or third story, if not to the top of the building. At times this is in or adjoining the light well, or by itself is used for spread of light and for ventilation. All such stairways are unenclosed, and at times are made use of for display of wares.

"The use of elevators increases yearly. Some stores have from one to two dozen. They are not enclosed, much less cut off, and they are frequently located with stairways."

These comments, applied particularly to department

stores, are quite as applicable to hotels, apartment houses, or office buildings. Innumerable instances may be cited to show that such open communications throughout buildings are the causes of rapid spread of fire, and consequent damage, as they are likewise the means of transmitting water or smoke, with the attendant menace to stock contents, and the lives of those within the structure.

The remedy cannot be found through the use of any horizontal shutters or hatches. These, if made to work automatically, seldom operate when required, and it is impossible to secure any such system which will be smoke- and water-proof. The passage of smoke or water is often quite as serious from the standpoint of insurance as actual flame, and smoke spread from floor to floor may cause panic or suffocation to the inmates. The only consistent remedy is to be found in isolated stairways and elevator shafts, completely enclosed by fire-proof partitions, and provided with satisfactory fire-resisting doors. If this is claimed to be impracticable, attention is called to the fact that both stairways and elevator shafts *have* been constructed in this manner, and they are neither inconvenient nor unsightly. In elevator doors, wire glass will permit observation by the operator at each floor, or some such automatic signal device may be used as is now employed in large office buildings, where passengers are indicated by an electric flash light in the elevator car to notify the operator.

In the same paper previously quoted, Mr. Crosby recommends as follows:—

“Stairs and elevators should be in brick shafts with spacious entryway on each floor within each shaft. A standard slide fire door should be hung at the shaft side of each opening into the entryway, permanently secured open by a 600 deg. F. solder releasing device. This is to insure that the door shall not be closed by hand in time of panic, and yet will close automatically at a high temperature. There should be two or more door openings from each floor into each shaft. They should extend but part way to the ceiling, thus reducing the tendency of smoke to escape in that direction. The normal draught would be toward the ventilating ducts, and should be sufficient to reduce the danger of hot-air and smoke explosions.

“The placing of doors at shafts is open to criticism inasmuch as they might be closed while people were yet alive within the burning room. We believe this can be met by concealed sliding doors, operated by an automatic device located near the floor, and requiring as high a temperature at that point as would be obtained by the presence of flames.

“These shafts, with glazed brick, tile, or mosaic walls, should present a pleasing appearance, and, above all, afford a sense of security to the customer which some day may be a feature in the popularity of a store.”

The third requirement made of consistent fire-proof design, *i. e.*, exterior precautions to prevent the communication of fire from or to adjoining property, is one which concerns duty or obligation to adjacent property holders, as well as considerations of self-interest. Fire-proof construction hardly deserves its name until fire can be confined to the apartment in which it started. Fire-proof floors, roofs, and partitions are provided without question to confine fire within the spaces limited by these

constructive features, while the exterior walls are left with numerous openings which menace neighboring property, or which subject the building itself to hazard from the close proximity of neighboring buildings of dangerous character.

The principal danger, whether that of *from* adjoining buildings or *to* adjoining buildings, will largely depend upon circumstances, but ideal conditions should make the latter consideration quite as important as the former, “and if an architect should be required to draw specifications for a building adjoining others with knowledge beforehand that its entire contents, from cellar to roof, were to be totally consumed, and he were under a bond to pay damages to surrounding property, he would not be more severe in his exactions than should a building law protecting neighboring rights in the enjoyment of property.”¹

In event of the contents consisting of large quantities of combustible materials, self-interest also demands that wall openings shall be capable of confining the fire, in order that it may not spread from floor to floor by means of such exterior openings. The cases of the Chicago Athletic Club building fire and the Livingston Building fire in New York, as well as innumerable other instances, serve to show the danger from this source. And now that this factor of hazard is becoming recognized, the means of remedy are at hand to supply the demand. The ideal solution may not have been reached, but very acceptable methods are certainly to be had. For warehouses, stores, etc., the standard tin-covered fire shutters are still used with great efficiency on alleys or rears where the appearance does not constitute an important feature, but for more conspicuous locations and on the fronts of all classes of buildings, a more sightly arrangement than exterior hanging shutters is necessary.

This want has been met by the introduction of solid metal or metal-covered window frames and sash, in combination with Luxfer prisms, wire glass, or plate glass electro-glazed in relatively small panes. Architects and owners are now very generally familiar with many tests which have been made with such windows, designed to act as fire retarders, but it is to be hoped that appreciation will be shown by a more general adoption of such admirable features. Nor should the use of such fire-resisting windows be considered as applying only to mercantile buildings. They could and should be used in all exposed cases in hotels, apartment houses, and office buildings. If the Luxfer prisms or wire glass are objected to because of the hindrance to outlook, a combination frame may be used, such as is now on the market, in which the lower sash is divided into three vertical panes, the two side ones being glazed with wire glass, while the center one is electro-glazed with one-quarter inch plate glass in panes three or four inches square.

With the care at present bestowed upon the constructive features of buildings intended to confine and resist fire, the continued use of plate and German glass for large and frequent exterior openings constitutes an inconsistency which must, sooner or later, give way to more approved and rational methods of protecting exterior doors and windows.

¹ See “How to Build Fire-proof,” by F. C. Moore, *THE BRICKBUILDER*, March and April, 1898.

Selected Miscellany.

NOTES FROM NEW YORK.

Prophesying is always dangerous, and, in fact, could be done with more security a month from now, but there are conditions in force at present which certainly enable us to obtain a clew as to what the near future has in store. It is more certain every day that the slow but sure decline in the prices of building materials to a normal point is beginning to revive operations which were checked by

Among the leading news items is the announcement that a new company has been formed for the purpose of erecting an eighteen-story office building directly opposite the new Custom House site. The building will be known as the Maritime Building, and devoted chiefly to shipping interests, and will be erected from plans by Henry J. Hardenburgh; cost, about one million dollars.

W. W. Astor will build under a twenty-year lease a ten-story hotel on the site of the Hotel Stonington, on Broadway, between 45th and 46th Streets. William C.



PARK PAVILION, KANSAS CITY, MO.

Terra-Cotta Columns made by the Northwestern Terra-Cotta Co.
Van Brunt & Howe, Architects.

the sharp advance six months ago, and to give courage to those who have been holding off. There are a number of actual projects of which we have heard, which are only waiting until the close of the dull summer season before they are started. To feel the pulse of the building trades one must consult the architects. From what we hear, they are quite dull this summer, and many of them are enjoying well-earned vacations; in fact a sensible tendency of this closing year of the century seems to be for men to take as long a period as possible during the summer for rest and recuperation.

Muschenheim, the proprietor of the "Arena," is the lessee. These undertakings show that renting conditions are such that, coupled with the current prices of building materials, owners of big properties and capital see a profit in work executed at the present time. No better argument could be formed than this in support of the general opinion that the fall will develop a generous activity in all branches of the real estate market, for after all, the prosperity of real estate depends upon renting conditions.



PANEL FOR POST-OFFICE, NEWPORT, KY.
Winkle Terra-Cotta Co., Makers.



TYMPANUM PANEL OVER ENTRANCE, ST. AUGUSTINE CHURCH,
PITTSBURGH, PA.

Perth Amboy Terra-Cotta Co., Makers.
Rutan & Russell, Architects.

NOTES FROM PITTSBURGH.

A beginning has at last been made on the new Union Station for the Pennsylvania Company, and the old station, which was built after the riots of 1877 as a temporary structure, has been torn down. The new building is to contain the general offices of the company. The changes include the raising or lowering of all tracks of the entire Pennsylvania system and the doing away with all grade crossings in the city.

Several new bridges across the Allegheny are being talked of, and the government engineers have reported that the present bridges are too low and should be raised. As this would cause a great change in the grades of adjacent streets, there has been considerable objection from property holders in those neighborhoods.

There has been considerable newspaper talk about the proposed addition to the Carnegie Institute; some have advocated the building of a separate building, while others have even proposed moving the present building across Forbes Street and then building the addition. However, as the plans of Alden & Harlow have already been approved, this discussion seems a little too late to have much effect.

Among work soon to be let may be mentioned the ten-story office building for the Central District and Printing Telegraph Company, on Fourth Avenue, Alden & Harlow, architects. The same firm have also prepared plans for a Carnegie Library, to be built at Duquesne, Pa.; cost, \$300,000.

Charles Bickel is the architect for a new office building, to be built at the corner of Fourth Avenue and Grant Street.



ST. PAUL'S CHURCH, CHICAGO.

Roofing tile furnished by the Ludowici Roofing Tile Co.
H. J. Schlacks, Architect.

NOTES FROM ST. LOUIS.

A number of important buildings which were contemplated for this season have been either postponed or abandoned altogether, and the work that is being done is in the way of smaller warehouses and residences.

The new building for the Knox Estate, corner of Broadway and Franklin Avenue, which has been de-



Terra-Cotta Fire-proof Construction.

NEW PRUDENTIAL BUILDINGS, NEWARK, N. J.
Executed by the Raritan Hollow and Porous Brick Co.
George B. Post, Architect.



Terra-Cotta Fire-proof Construction.

NEW PRUDENTIAL BUILDINGS, NEWARK, N. J.
Executed by the Raritan Hollow and Porous Brick Co.
George B. Post, Architect.

signed by Mauran, Russell & Garden, will be of brick and terra-cotta, in the English Renaissance style.

T. C. Link has been appointed architect for the new Capitol Building at Jackson, Miss., which will cost \$1,000,000. Mr. Link's plans were adopted from among those submitted in the recent competition for the building.

E. C. Klipstein was the successful architect in the recent competition held for the new Kirkwood High School Building.

After numerous efforts to commence the building of a new city hospital to replace the one destroyed by the cyclone some years ago, there now seems to be a prospect of something being done, the Board of Public Improvements having draughted an ordinance with a view to proceeding with the work. A commission was appointed some years ago to prepare preliminary plans, contemplating a hospital on the pavilion plan to cost \$1,000,000, but the financial condition of the city has prevented commencement on the work. There is now available about \$240,000, and a fund accruing for building purposes at the rate of \$50,000 per year.



PANEL.

Made by the New York Architectural Terra-Cotta Co.



OFFICE BUILDING, FIFTH AVE. AND 19TH STREET,
NEW YORK CITY.

Executed in white semi-glaze terra-cotta.
Excelsior Terra-Cotta Co., Makers.
Robert Maynicke, Architect.

Percy & Polk have let contracts amounting to \$100,000 for a business building, seven stories high, adjoining the handsome Hale Building on Market Street. It will be of richly-ornamented white terra-cotta in the Byzantine style. The same architects have in hand a residence for the widow of the late Robert Louis Stevenson, the novelist.

William Mooser has been appointed architect to the new Board of Works. His duties will consist in passing on plans and specifications for new buildings or changes in old ones.



TERMINAL, WARNER BUILDING,
PHILADELPHIA, PA.

Conkling-Armstrong Terra-Cotta Co., Makers.
C. W. Bolton, Architect.

NOTES FROM SAN FRANCISCO.

The building business continues good with every evidence of further improvement through the winter. The general character and design of structures show a marked change for the better. There was \$1,160,000 more expended during the first seven months of this year than for the same period of last year.

Two competitions were lately decided, the open one for the Oakland Free Public Library, the gift of Andrew Carnegie, in which Bliss & Fabille were the successful architects, both of these gentlemen coming, some little time back, from the office of McKim, Mead & White. The contract has just been let for \$47,000, and calls for the building to be finished March 18, 1901. The materials will be light gray brick and terra-cotta.

The other competition, a limited one for the Mutual Savings Bank Building, was awarded to Curlett & McCaw; the cost will be in the neighborhood of \$300,000, and the material will be either brick and terra-cotta, or sandstone. It will be entirely fire-proof.

IN GENERAL.

Henry Maurer & Son, manufacturers of fire-proof building materials, of New York City, are erecting and furnishing a 30-ft. front stone dwelling house, three stories high, at Ogontz, Pa., wherein they are using their latest system of floor construction—the "Herculean" terra-cotta flat arch; this system eliminating the use of iron beams and making an absolutely fire-proof building. Much interest is being manifested by the building fraternity in this operation.

Edward R. Diggs & Co., of Washington, D. C. and Baltimore, Md., are furnishing for the U. S. Government Printing Office, at Washington, D. C., about 1,250,000 of their light-colored impervious front brick (this being one of the largest light-face brick contract ever sold in this country). Among some of the other operations using their brick are the following: Guardian Trust Building, Baltimore; Winchester City Hall, Winchester, Va.; apartment house 16th and U Streets, N. W., Washington; the Bond Building, New York Avenue and 14th Street, N. W., Washington.

The Columbus Face Brick Company has been awarded the contract to furnish its "Ironclay" flashed brick for the New Electric Power House of the Manhattan Railway Company, of New York City, said to be the largest power house in the world.

James A. Davis & Co., Boston, have been awarded the government contract which calls for 15,000 barrels of Portland Cement at Portland Harbor, Me. They also have contracts to supply their Alpha and Lehigh brands of Portland Cement for the New Cambridge Bridge, Boston; Red Bridge Dam at Three Rivers, Mass.; Boston Electric Power House, Boston, and Edison Electric Power House, Boston.

Among the contracts recently placed with the Powhatan Clay Manufacturing Company for their cream white and gray front brick is the new building for Adams & Co., Sixth Avenue and 21st Street; new office building at Broad Street and Exchange Place (about 1,000,000 white brick), stores and lofts, Fifth Avenue and 19th Street, all of New York City; gray brick for the Jerrier Building, Washington, D. C.; Seaboard Air Line Depot, Petersburg, Va., D. Wiley Anderson, architect; St. Andrews' Parish House, Richmond, Va., same architect.



PILASTER AND JAMB.

BANK, WATER-TOWN, MASS.

Atlantic Terra-Cotta Co., Makers.
C. H. Brigham, Architect.



NORTH AMERICAN TRUST COMPANY BUILDING, NEW YORK CITY.
Bruce Price, Architect.

Front Brick supplied by the Powhatan Clay Mfg. Co.
Fire-proofing supplied by the National Fire-proofing Co.



PANEL. APARTMENT HOUSE,
NEW YORK CITY.
New Jersey Terra-Cotta Co., Makers.

A SERIOUS DAMAGE SOON REPAIRED.

THE Hydraulic-Press Brick Company, by which we mean both the parent company in St. Louis and the branches in the various large cities of the country, has repeatedly won a name for itself by the excellent quality of its manufacture and the even value of its products, no less than by the thoroughly business-like methods by which it conducts its affairs. The excellence of its equipment and management has been shown in a very interesting manner by the results of a fire on the night of May 14, by which the works of the Washington Hydraulic-Press Brick Company were almost entirely destroyed by fire, nothing being saved but the office, the stables, and the clay sheds. These works, consisting of engine and machine houses, shops, kiln sheds, warehouses, etc., cover an area of about ten acres and are one of the largest and most important of the Hydraulic-Press Brick Company group. They are situated at Waterloo, Va., a few miles from the city of Washington.

Realizing at once that a disaster of this sort would mean a great deal to the architects and builders who are de-

pending upon the output of the yard, it was determined to at once draw upon the resources of the company in such a manner as to put the Washington works on its feet



WASHINGTON HYDRAULIC-PRESS BRICK PLANT, MORNING AFTER FIRE.

with the least possible delay. As Mr. W. N. Graves, general superintendent of the Hydraulic yards, was confined to his house by injuries received in a recent accident, President Sterling hastened to Washington, while the remaining officers of the company, after consultation and conferences with the railroad officials and their own local managers, decided to dismantle and ship bodily to Washington from the works of the parent company in St. Louis, two presses with all connections complete, ready for operation. At the same time the chief millwright and builder of the company was sent on from St. Louis with all the needed drawings of buildings, and authority to employ all requisite assistance; while skilled employees of the company were hastened to Waterloo to wreck the destroyed machinery and to load it upon cars for shipment for St. Louis, where it could be repaired and thoroughly restored to its original condition, so it could take the place of the presses shipped East from St. Louis. It was promised that in thirty days the Washington works should be in operation again.

The first shipment from St. Louis was on May 26, and reached Waterloo on the 31st. The remaining three cars of machinery reached their destination in an equally short time, and no difficulty was experienced in obtaining all the carpenters and brick masons needed, so that new and substantial buildings, built of brick, were under roof before the machinery was all in place; and so successfully was the work planned that on June 19 a telegram was received by the St. Louis office, stating that the machinery was working to its full capacity and everything was in satisfactory condition. The promises made had been fulfilled in twenty-eight days, and the Washington Hydraulic-Press Brick Company has since been running day and night to regain lost time. As the damage to the stock of bricks was comparatively light there has been no interruption of shipments and orders have been promptly filled. This shows what good executive ability with means and men behind it can accomplish in an emergency. We print herewith two photographs, one taken the morning after the fire, and the other just thirty days later. These tell better than any words what had to be done.



WASHINGTON HYDRAULIC-PRESS BRICK PLANT, THIRTY DAYS AFTER FIRE.

THE ATELIER FITZWILLIAM, AUDITORIUM BUILDING, CHICAGO.

PERSONALLY CONDUCTED BY F. J. FITZWILLIAM, A PUPIL OF D'ESPOUY, WHO WON THE GRAND PRIX DE ROME IN THE YEAR 1884.

SPECIAL SKETCH COMPETITION.

DURING the past year many draughtsmen have asked if there was not some way by which they could work at their homes and send or bring their studies to the atelier for criticism; so, in accordance with this demand, we shall, beginning with the month of September, 1900, inaugurate a special nine months' series of sketch problems, which are intended to be worked up spontaneously without criticism. One of these problems will be issued each month from September to June each year. Every effort will be made to maintain these programs of as lively an interest as can be, and the best solutions each month will be awarded prizes as stated below. Send your design and \$1.00 for entrance into September competition, or send \$8.00 and become entered for all nine of the competitions from September, 1900 to June, 1901. On October 1, we will remail it to you, postage prepaid, with a full and complete critical analysis of its faults and merits and whatever prize (if any) it has been judged worthy to receive. The names and addresses of prize winners will be announced each month.

For the month of September, 1900 there will be twenty-five cash prizes, aggregating \$145.00, divided as follows: One first prize of \$30.00; two prizes of \$15.00 each; three prizes of \$10.00 each; four prizes of \$5.00 each; five prizes of \$3.00 each; ten prizes of \$2.00 each.

PROGRAM FOR SEPTEMBER.

A FOUNTAIN NICHE.

Preamble.—In a suburban district of a city of two hundred and fifty thousand people, it is proposed to cut a roadway around the base of a hill which extends in a rapid slope upward from the sea. A wall low enough not to obstruct the view shall separate the driveway from the sea, and the hillside of driveway shall be closed by a perpendicular wall of masonry. This wall is to be capped by a balustrade for the protection of a pedestrian's walk located on the hillside at that height. The total height of this wall including balustrade shall not exceed 26 ft. Thus a broad roadway for vehicles at the lower level nearest the sea, and a narrower way for pedestrians on a higher plane, will run parallel each to each and to the coast line.

Requirements.—The object of this problem is to design the hillside wall, and particularly a drinking fountain for horses in connection with this wall. In addition to the fulfilment of practical requirements, this fountain should be architecturally adorned; and since it is imperative that it shall occupy as little of the roadway as possible, the fountain shall be in the form of a grand niche, intersecting the hillside wall and extending beneath the pedestrian's walk. The horse trough, however, shall occupy space on the driveway. The water will be supplied by artificial means, and the fountain shall be entirely of masonry.

Drawings.—A plan, a section, and an elevation showing a portion of the wall on either side are required, all at the scale of $\frac{3}{16}$ in. equals 1 ft. The rendering will be left to the discretion of the designer, but the paper must be cut to the uniform size of 10 by 18 ins.

Send drawings unmounted to The Atelier Fitzwilliam on or before September 30, 1900.

Any deviation from the program of requirements will debar the candidate from the competition. No further instructions are needed or will be given.

DETAILS OF ITALIAN BRICKWORK
MEASURED AND DRAWN BY WILL S. ALDRICH

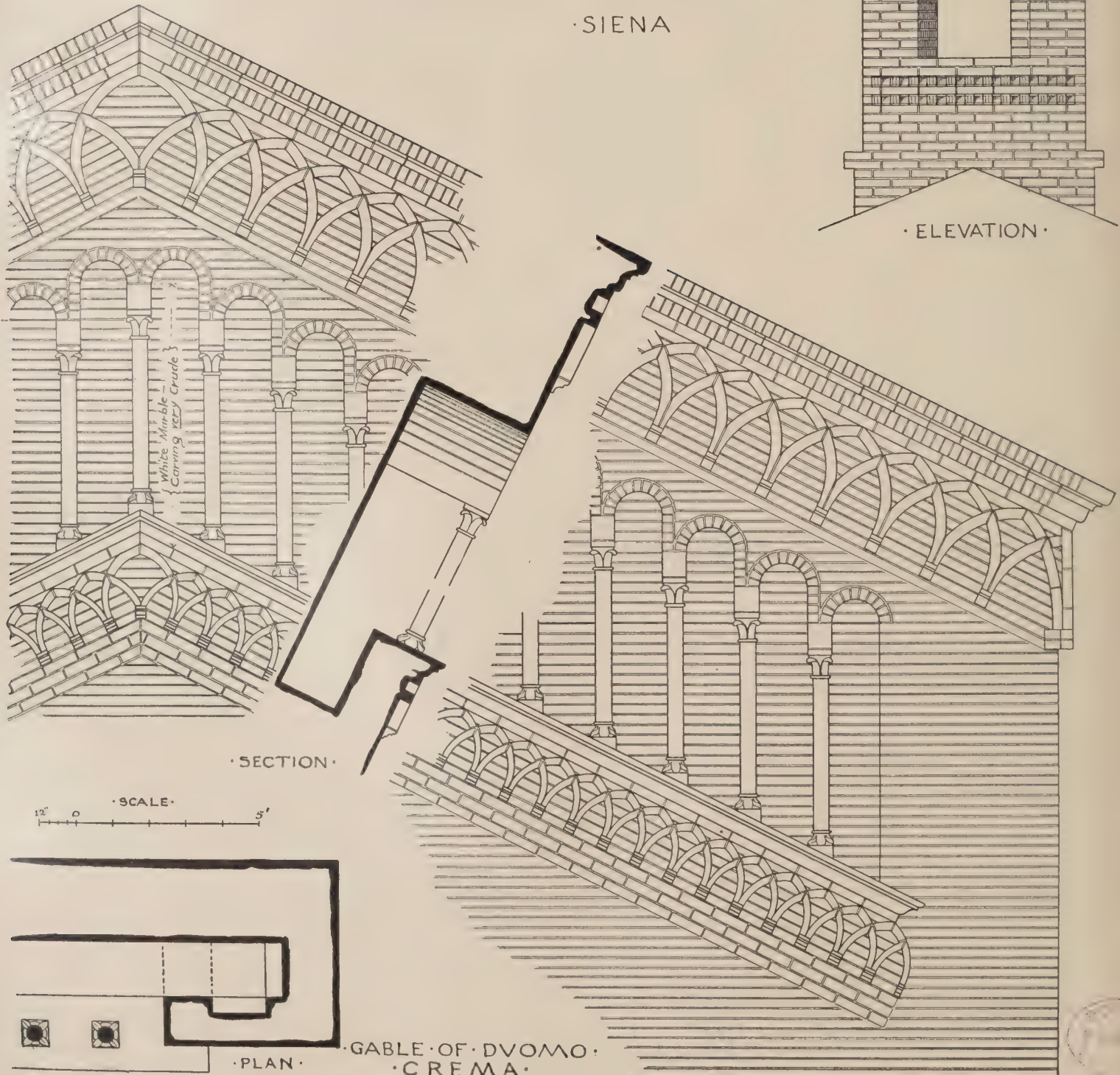


PLAN

CAMPANILE OF S. M. DELLA NEVI
SIENA



ELEVATION

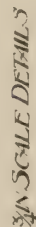


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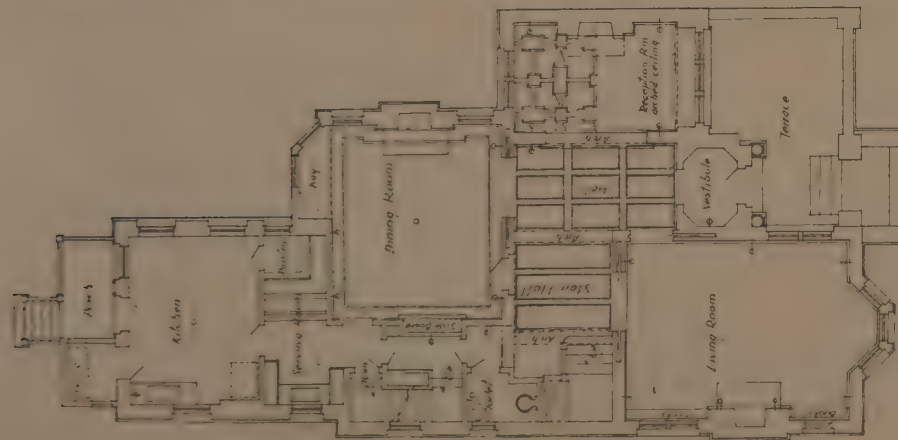
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PLAN

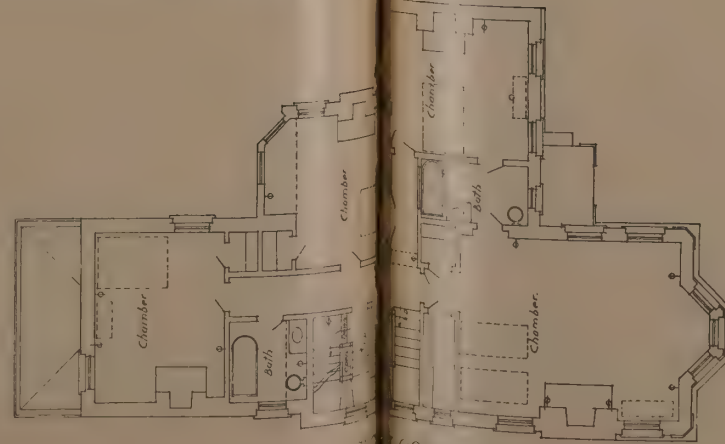
GABLE OF DUOMO
CREMA



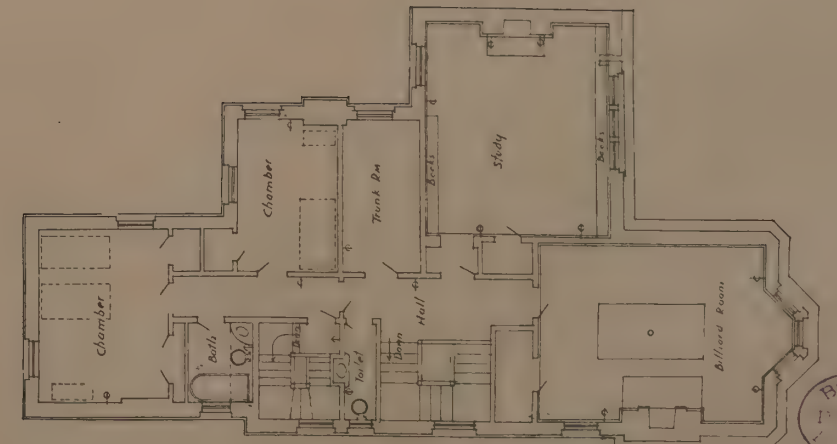
DETAILS, BUILDING FOR THE BALDWIN PIANO COMPANY.
ELZNER & ANDERSON, ARCHITECTS.



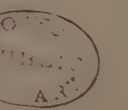
FIRST FLOOR.

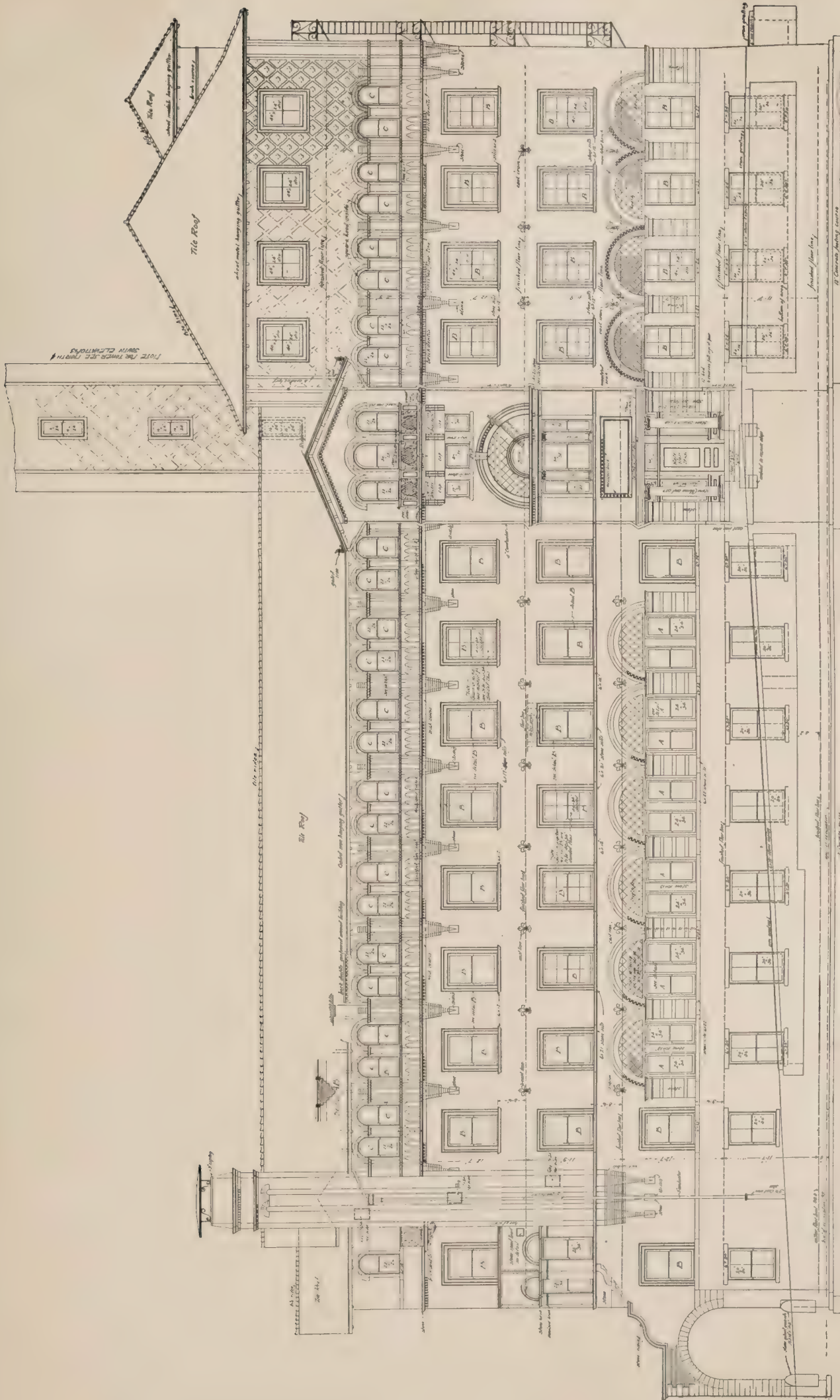


SECOND FLOOR.
HOUSE, WASHINGTON AVENUE, CHICAGO, ILL.
POND ARCHITECTS.



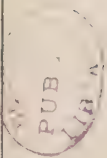
THIRD FLOOR

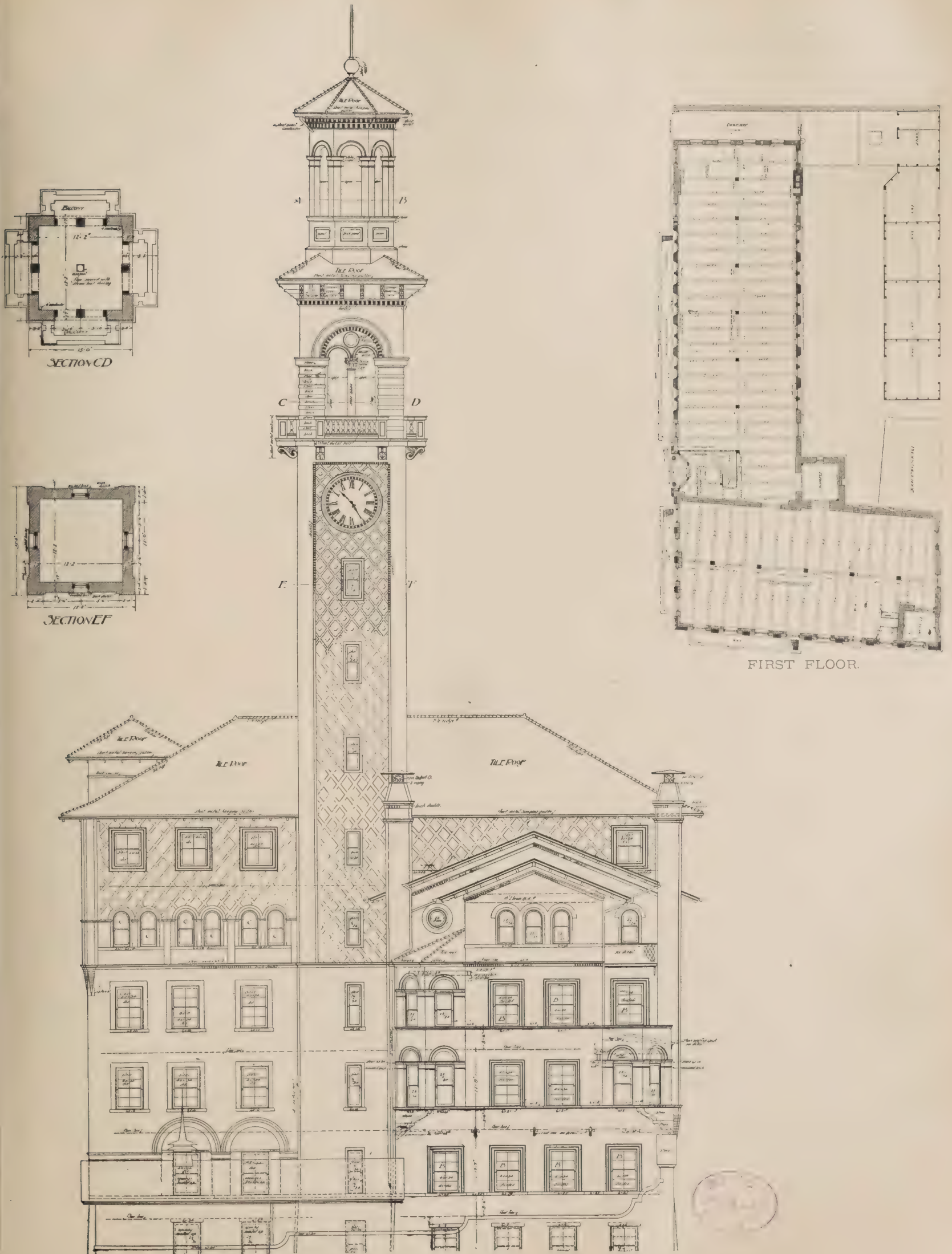




EAST ELEVATION, BUILDING FOR THE BALDWIN PIANO COMPANY.

ELZNER & ANDERSON, ARCHITECTS.





SOUTH ELEVATION.
BUILDING FOR THE BALDWIN PIANO COMPANY.
ELZNER & ANDERSON, ARCHT.



GYMNASIUM AT HAMILTON FISH PARK, NEW YORK CITY.
CARRERE & HASTINGS ARCHITECTS.



BALLANTINE GATEWAY, NEWARK, N. J.
CARRERE & HASTINGS, ARCHITECTS.



HOUSE, WEST 85TH STREET, NEW YORK CITY.
HOWARD & CAULDWELL, ARCHITECTS.





HOUSE, RIVER DRIVE, NEW YORK CITY

THE BRICKBUILDER,
AUGUST,
1900.





WASHINGTON ARCHITECTURAL SOCIETY
POWELL & COY. N.Y.C.



THE BRICKBUILDER,
SEPTEMBER,
1900.



THE PALAZZO DEL POPOLO, ORVIETO, ITALY.



THE BRICKBUILDER.

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Advertisers are classified and arranged in the following order:—

	PAGE		PAGE
Agencies.— Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

AMERICAN FARMHOUSES.

WHEN Hamlin Garland, some years since, published his tales of Western prairie life, the impression of hard, grinding, thankless poverty and dreary, hopeless surroundings, which he depicted, brought home to many of his readers the realization of conditions which are but too often ignored. Agriculture in itself is one of the noblest of callings, and the farmer is almost the only producer in the Commonwealth who is self-supporting; and yet the average farmhouse is a most dissolutely dreary and artistically barren habitation, and Mr. Spencer's paper on the subject, in this issue, ought to arouse a deeper appreciation of the possibilities of agricultural architecture. Theoretically, farm life is all that is ideal, and the open air existence is the charming return to nature for which we all sigh; and if our farmers could be induced to give to the construction and adornment of their houses but a tithe of the thought and the money which is lavished in many cases upon the barns, stables, and pig pens, there would be no cause to complain of the habitations of the American husbandmen. Mr. Spencer views the subject from the standpoint of the artist as well as the architect. The possibilities of the farmhouse appeal to him as they should appeal to the inhabitants, and he is able to show that it is not necessary to endure the frightfully uninteresting and almost hope-

lessly commonplace structures which are now the rule, but that the fifteen thousand well-built, comfortable, roomy houses of wood, brick, and stone ought, for every reason, to multiply until the six million flimsy, wooden farmhouses have shrunk to the limitations only of the persistently shiftless farmers. Our readers doubtless recall the very pointed story by Mary E. Wilkins, published a few years since, of how a determined farmer's wife forced her husband to provide for her a shelter at least as good as that he offered his horses, showing how "the Revolt of Mother" brought about a regeneration of the farm architecture. Mr. Spencer has made a special study of the American farmhouse, and he has brought to it an appreciation and a degree of talent which has given promise of most excellent results. It ought not to be difficult to evolve a more rational, more artistic, and more hygienic treatment of our farmhouses. It is at root quite as much ignorance as lack of artistic appreciation which permits our farmers to be content with what they have, and once we can get them aroused, once they can be made to feel that a well-built brick house is cheaper, more conducive to health, more lasting, as well as better looking than any of the wooden structures, such as are now the rule, it will not be difficult to predict the numbering of the days of the prairie shanty. Every other country in the world builds interesting farmhouses. We did once, as Mr. Spencer's illustrations show, and now we must turn around, and if we do not revert entirely to the fashion of our New England forefathers, we can, at least, take a measure of their spirit and put it into permanent forms of masonry construction, such as were very often beyond the reach of any but the richer colonial farmers, but are now possible for every one.

Burnt clay, as a material for farmhouse construction, has everything to recommend it. It is comparatively unknown here for the reason that, up to twenty or twenty-five years, it was in many parts of the country a more expensive material than wood. But any traveler through Holland, through the rich valley of the Po, or through the central counties of England can testify to the prevalence of brick farmhouses; and surely if the peasants of those countries are able to build picturesque and rational brick farmhouses, there is but slight excuse for the free farmers of our own country.

Example, after all, is a better teacher than precept, and it is hoped that the competition for the design of a brick farmhouse, which appears in this number, will bear its part in developing possibilities. When our bright young architects want to amuse themselves with a pastime sketch, it is more apt to take the form of something rural than civic, and a farmhouse is more apt to appear under the facile pencil than an arch of triumph. The

problem is certainly fascinating enough, and it ought to have called out very interesting sketches.

WHAT IS AN ARCHITECT?

IN a recent number of the *Inland Architect and News Record*, there was a very interesting editorial on what the modern architect should know. We agree thoroughly with the editorial in its main points, but we would take issue on the idea that the paths of the architect and engineer cross, and that it is necessary for an architect to be primarily, or even largely, of an engineering bent of mind. The *Inland Architect* states that older architects are aware it is not usually difficult to obtain draughtsmen who are, or say they are, artistic, but that it is difficult to find those who are competent to lay out in a proper and capable manner the details of any considerable structure. Our own experience has been directly the contrary of this. It is rare that a draughtsman can be found who can be trusted with any considerable degree of artistic license in designing a building. The real architecture, by which we mean the design as distinct from merely practical considerations, is the hardest part of the whole problem to solve. We never have found any lack of thoroughly competent draughtsmen with engineering tendencies, who could be safely entrusted with a very wide latitude in the designing of a structure. An architect is obliged to possess a wide range of knowledge and experience, and he must know and thoroughly understand the mechanical and engineering details of his profession, but this part can be acquired by any one with due diligence and application; whereas the finer qualities of design result not merely from years of serious training, but also from the possession of that intangible something which we may call genius or inspiration, but without which no architect can be really successful. If the architect undertakes to compete with the engineer on his own ground he will be beaten hands down, but it will be a sorry day for the art of this country when engineering considerations are to take precedence of pure design; and our advice to a young man would be first and always to study design, beauty, purity of line, fitness of material, and, if he is a man of only ordinary mental endowment, he need have no difficulty in solving nearly all the engineering problems associated with the largest buildings, and the few such problems which would be too much for him would be of a nature which he ought to place in the hands of a competent engineer in any case.

STEEL IN SMALL BUILDINGS.

ANY one who has had occasion to familiarize himself with the construction of dwellings in the larger European cities cannot fail to be impressed with the extent to which steel and masonry are used therein as compared with what is the practice in this country. The last few years has seen an enormous expansion in the use of steel for public buildings, but we have not yet reached a point where the building public appreciates the necessity for masonry constructions in dwelling houses, at least not in dwelling houses outside of the solidly built lines of the principal streets. We believe the time is fast coming, however, when the advantages of a combination of steel and

brick will appeal to our constructors to an extent which will create as great a revolution in the methods of private construction as has taken place already in our commercial work.

THE PALAZZO DEL POPOLO, ORVIETO, ITALY.

SOME eighty miles north of Rome on a great isolated tufa rock stands the mediæval town of Orvieto. The perpendicular sides of the plateau rise, streaked and stained with the gorgeous colors of age, above the level valley through which runs the railway to Rome. A remarkably steep cable tramway conveys the passengers from the station to the top of the plateau, landing them at the entrance of the winding main street of the ruinous old town. Such tourists as stop at Orvieto are generally attracted by the splendid cathedral and its works of art, and few find it to their taste to pass more than one night in the old hill town. The houses, built of the coarse, black volcanic stone, many of them windowless and dropping to decay, the repulsive filth of the alleyways, and the somewhat sullen looks of the population contrive to give Orvieto a gloomy and forbidding appearance. Squalor and emptiness are seldom picturesque; merriment and color are found more in crowded populations than in those decimated by poverty.

This dilapidated condition of Orvieto is expressed in the photograph of the rear of the Public Palace, which we present this month as our frontispiece. The massive and time-stained walls, which, with their yawning openings, frame the disheveled heads of the motley population harbored in these rooms which have been the stronghold where many a potentate and civic dignitary has upheld the honor of Orvieto, are characteristic examples of the construction of most of the city.

Little is left of the original architecture of the Palazzo del Popolo, except the splendid row of triple windows, with their delicate columns and tracery, and curiously decorated archivolt which spans the entire motif. The great archway extends through the building, and on the front side nearer to the main street there is a flight of broad steps leading up to a balcony, as was common with Italian municipal buildings. The coarse character of the masonry is clearly indicated by the photograph. The building was erected during the twelfth or thirteenth century, and although much ruined is an interesting link in the chain of famous Italian town halls.

Aside from its dilapidated state, Orvieto is a place which the traveler, in search of impressions, will hardly care to miss. The imposing mass of its craggy plateau, as it first comes into sight from the train, the flight upwards on the funicular tramway with picturesque peasants and market women, the entrance through the black tunnel under the fortress, the interminable main street which has to be traversed to find the inn — then the inn itself with its vast brick-paved bedrooms and gloomy halls, whose depressing effect is, however, happily neutralized in the dining room by the copious flasks of the good red wine of Orvieto, which adorn the tables, — all these contrast with the cathedral façade, blazing with mosaic, and the gorgeous sunsets which stream over the level valley and old Etruscan city, rich with its memories of over a score of centuries.

American Farmhouses.¹

BY ROBERT C. SPENCER, JR.

THE student of rural domestic architecture must be content to find his pleasure chiefly in the enjoyment of field and woods. The average American farmstead, and its weather-beaten, ramshackle, wooden buildings and unkempt surroundings, adds but a doubtful charm to the landscape. The fine old relics of colonial days, which still exist in New England and the South, were the country seats of gentlemen who had other resources than the soil. They were not farmhouses. Outside their own provincial environment they have not even served as prototypes for the homes of the real farmers whose acres are their sole support.

Disregarding such pioneer makeshifts as the log cabin, the "dug-out" and the "dobe" hut, we have, in the United States, a vast territory presenting every diversity of climate, topography, and vegetation, over which is thinly scattered some six million flimsy wooden farmhouses. Besides these, in the older and richer farming communities, there may be, all told, possibly fifteen thousand well-built, comfortable, roomy houses of wood, stone, or brick, which have some characteristic architectural or pictorial charm, adding color and pleasing inter-



FARMSTEAD NEAR TOPSHAM, ME.

est to their natural environment, and offering suggestion and inspiration to the architect.

Even in the rich farming sections of the older States, there are many rural habitations so brutally bald, ugly, and forbidding that it may be said of our own benighted heathen, still deaf to the gospel of beauty, that they live in a land "where every prospect pleases and only man is vile."

Amid the freshness and beauty of the fair open country, one cheerless or unsightly house seems, by contrast, more discreditable to a highly civilized and progressive race than a whole row of them in a city.

Poverty and struggle are not alone accountable for poor housing. Many a countryman who is well-to-do, even wealthy, lives in the most primitive and comfortless fashion. The average farmer, more especially in the rougher parts of the South and West, does not know how to live. He and his, toil hard and get little of the higher side of life in return. Having the same social instincts and needs as other men, he isolates himself in the midst of a large tract of land, and during the long winter months, when there is little outdoor work to do, he and his unfortunate family are often shut in like hermits, and cut off from convenient intercourse with their fellows, to drag out a dull, depressing, animal existence amid bare and ugly surroundings. Often the children

cannot even attend school. In most European countries, — doubtless, as a result of the feudal system, — where for mutual support and defense the homes of the serfs and dependents were grouped near the manor or castle, the lonely isolated farmhouse is less common. In France, England, Russia, and Scandinavia the owners or workers of a number of farms group their houses in a little ham-



OLD SHINGLED BARN, PHIPSBURG, ME.

let with its school, its church, and its smithy, going out in all directions each morning to the distant fields or vineyards, and returning at dark to chat awhile after the evening meal with friends and neighbors, talking politics or indulging in mild gossip.

The same communal arrangement was forced upon our early New England settlers by the hostilities of the Indian tribes, and on the outskirts of the smaller cities and towns still remain many delightful examples of Colonial farmhouse architecture. But with the banishment and subjugation of the Indians, and the beginning of the era of settlement upon government lands, with its requirement of five years' actual residence thereon before title could be established, the lonely isolated farmhouse became common. In the "Western Reserve," in the South, and in Michigan and Wisconsin it was at first built of logs. Farther west on the prairies it was a cheap shelter built of pine lumber or merely a sod house constructed from the humble material nearest at hand. On the Pacific slope, with its kindly climate, the simplest and rudest housing sufficed. These were the homes of the



FARMHOUSE NEAR LA GRANGE, ILL.

pioneers. The day of the log house is passing, and the sawmill has long been at work devouring the forests for lumber to ship to farms cleared originally in the midst of the virgin woods. The sod house and the "shack" are but temporary makeshift shelters, and the cheap frame house is taking their place to remain until the era of wood makes way for the era of brick and stone.

¹ Copyrighted by Robert C. Spencer, Jr.



FARMHOUSE ON KENNEBEC RIVER BELOW BATH, ME.

Each generation will see better and more substantial buildings on our farms; but while the present system of single isolated habitations so widely prevails, the old difficulty of keeping the boys on the farm will remain, and there will be no little diminution in the stream of fresh blood which the cities, vampire-like, draw from the country. And never was there greater need than now to make rural life attractive to the children of the farms. The glimpses of the great, alluring world, gotten through visits to the nearest towns, through study at school and the reading of books and papers, impel the restless, eager youth, weary he knows not why, not of the mere grind of toil, but of the heart and soul starvation that is part of a life without recreation or beauty. The country is not everywhere beautiful. Amid the hills of New England, or the mountains of Tennessee, the rudest mind is



SKETCH BY R. C. SPENCER, JR.

conscious of nature's loveliness. But what of the endless sweep of prairies where even the wild-flowers, by endless multiplication, become as weeds, and the horizon line is broken only by a few farmsteads with their straw stacks, windmills, and puny trees? As seen from a railway train the prairie farmhouse is as lonely as a passing craft at sea. The shimmering corn fields and floor-like meadows stretch away to the horizon's circle, and the farmsteads, with their clumps of trees, are like islands dotted wide upon a boundless ocean. There is a certain vastness and freedom there as of the sea, but the great everlasting flatness has no feature of interest, no focal point of natural beauty or grandeur to rest the eye. There is, indeed, the beauty of the skies, and the play of light and shadow, sunshine and storm, over the great level. The rain passes, and in the west a rifted

cloud opens at the touch of one slant ray, and far out upon the gloomy plain a golden finger touches the earth, and a windmill gleams wet against the rumbling darkness, as the thunder rolls and the tassels of the corn bow gently before the dying wind.

Winter comes, and the prairie is a frozen waste, across which the bitter winds drift the stinging snow-dust, until every flimsy, wooden farmhouse shivers on its foundation, if, mayhap, it have any foundation better than posts driven into the ground and a banking of dirt and leaves. When the thawing weather comes the unspeakable roads of bottomless muck stand out black against the surrounding snow, and travel is well-nigh impossible. And the homes themselves, — what do they offer of comfort and



SKETCH BY R. C. SPENCER, JR.

beauty? We all know them, and the helpless poverty of ideas expressed by the average farmhouse. It is just one degree smaller and cheaper and more cheerlessly commonplace than the average mean little house which the speculative builder "puts up" in the humbler suburbs for poor clerks and working-men.

It has never occurred to their builders that even at the very small outlay to which the average farmer is confined, some pleasing effects of proportion and mass might be got, more lasting and beautiful materials used, more interior comfort and more domestic conveniences planned for. The women of the household, particularly if they are of foreign origin and peasant antecedents, are literally hewers of wood and drawers of water. The pump has replaced the well with its old oaken bucket, but the pump is out in the yard and not in the kitchen.



SKETCH BY R. C. SPENCER, JR.



A SOUTHERN FARMHOUSE.

Sinks are luxuries for the few. Dish water is thrown out near the kitchen door. Probably not more than one farmhouse in twenty has a furnace or a plumbing system of any kind. In nearly every house, and this is equally true even in New England and in the thriftiest parts, one sacred room is dedicated and set apart to fashion and ceremony. It is the "parlor" idea, which runs through all modern domestic architecture, expressed here in a peculiarly absurd yet pathetic form. Shut up, unused, and frigid, except on rare occasions, musty with disuse, and its walls ghastly white or covered with some poor, pale paper, a few chromos and faded photographs in hard black frames, and all of the other evidences of poverty of taste and imagination, the so-called "best room" is cut out of the already modest ground plan, leaving the family to live in kitchen and dining room, and to eat in the former oftener than in the latter, where the atmosphere reeks of coarse cookery, stale tobacco, and dirty boots and clothing brought in by the men from the fields and barns.

Of sanitary, bathing, or laundry conveniences there are usually none. Thousands of farmers have never heard of such things. Thousands who have heard of them and might afford them scoff at them. Housework is drudgery at all times, and during haying and harvest it is slavery. The pictures given in some of our recent fiction of hard grinding farm life with few touches of softness or beauty to relieve them are not too darkly

drawn. Picture to yourself the boyhood life of a David Harum. The fiction of Hamlin Garland, Mrs. Peattie, and E. V. Smalley gives no exaggerated impression of actual and common rural conditions, where farms are isolated and the struggle against poverty is endless and bitter.

The Esquimaux Indian with his wood and bone carving, his basket-weaving, and implement-making has more to occupy and develop his creative faculties than the toilers of the prairie in whom the love of beauty and the desire to create gradually die; where the lively imagination of childhood is starved and dwarfed by the hard reality of a one-sided material existence. To one of those warped and undeveloped natures art is a strange and foreign thing, to be mistrusted and shunned because not understood; because enjoyed and patronized by the favored rich and the idle-born; a thing for weak women and lazy men.

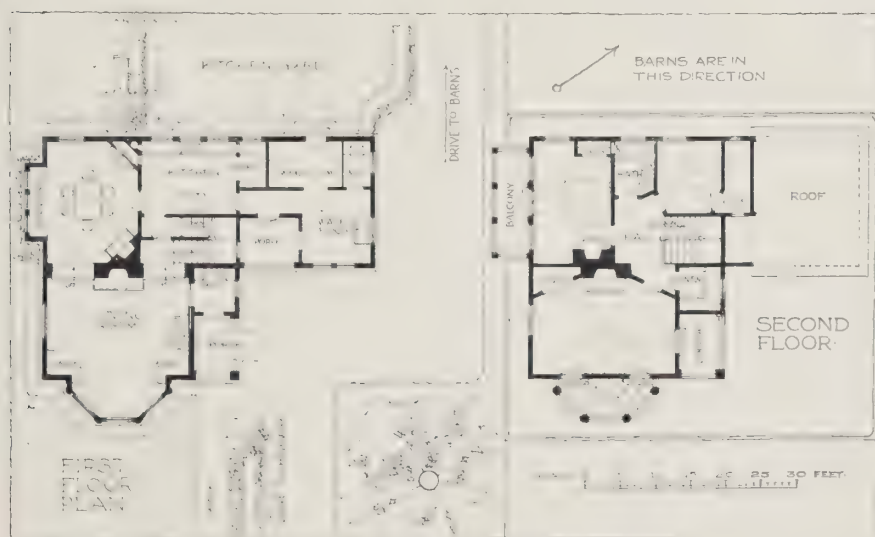
From infancy the child of the farm must be taught to truly see form and color, the mind to understand, the imagination to create, and the hands to do for the pure pleasure of doing. In the country isolation must cease,



A SOUTHERN FARMHOUSE.

houses must draw together about the schoolhouse as a center, and there must the children have the beneficent teaching of the kindergarten, the spirit of which should not be withdrawn as the pupils pass from childhood, but should pervade all the years of schooling. Loving beauty, knowing its value in life, sensitive to its myriad

forms, the farmer of the future will then value beautiful surroundings as well as bountiful crops. Realizing the benefits and advantages of combination and cooperation, he will work intelligently for the development of little communities, wherein, by united effort, comfort and conveniences of living, now rare, may be enjoyed by all. On the industrial side of his calling he will perfect such combinations of capital and of business interests as to make the earning of an independent and comfortable living a certainty for the reasonably careful and industrious. Trusts and the "plutocrats" will no longer be his bugbears, and his sons will no longer seek the city in search of uncertain fortunes. Among the factors working toward these improved conditions of rural life are the efforts of educators to improve country



PLANS, SOUTHERN FARMHOUSE.

schools, and to make them more available to the farming population; the spread of the grange idea promoting social intercourse, mutual improvement, and the cooperative idea; the establishment in the most progressive States, of farmers' institutes as a phase of State university extension; the good roads movement and the work of agricultural schools and colleges.

Finally, hundreds of thousands of agricultural and family papers are sent broadcast among the farmers every week, reaching many humble homes where the illustrated magazines are never seen and books are few. Some of these have well-edited columns on the arts and handicrafts, and several of the leading farm and family journals have taken up the farmhouse problem in a way which ought to do much good to awaken their subscribers to the neglected possibilities of rural life in respect to the home and its environment.

Doubtless the majority of those to first feel the force

barn builder has been progressive and ready to spend money within the limitation of wooden construction and according to his means. It is in the matter of the house that he has signally failed. Here his intense natural conservatism, joined to force of habit in crude ways of living, has stood in the way of progress. The journals he takes have always dwelt chiefly upon the practical details of his business, leaving the home itself, the center and soul of the farm, to the rude hands of the ignorant, unprogressive country builder. Of recent years, with the perfection of cheap methods of photographic reproduction, the country has been flooded with ready-made designs for houses of every size and cost, planned for all sorts and conditions of men except farmers. These designs are most of them so bad that it would be fortunate if the country people had escaped their blighting influence. But in the hands of the village builder they are made, with some changes in the line of cheap con-



A WISCONSIN FARMHOUSE.

of these pleas for better homes will be the wives and daughters. In time the sterner males will yield to good and persuasive influences; and when once the movement for a really good rural architecture has begun, they may be expected to take quite as much pains to comfortably house their families as to properly shelter stock and machinery. Up to the present time the typical American country barn has been better planned and better built than the average farmhouse. In the building of barns and outhouses, as well as the construction of labor-saving agricultural machinery, Yankee skill and brains have evolved a type which, from a purely practical standpoint, is superior while it lasts to the better-built foreign models of brick and stone. Unhampered by any fear of being accused by neighbors of foolish extravagance in building as long as the ends sought are purely "practical," without taint of æsthetic "foolishness," or weak catering to needless refinement of living, the farmer as a

struction, to serve for the new homes of the wealthier and more ambitious farmers. We have all seen these fearful and wonderful structures with their ridiculous little towers and turrets, or their now antiquated mansard roofs and cupolas, betokening the exceptional prosperity and munificence of the owners. Begotten by blind custom, conceived in a commercial spirit and born of commonplace mediocrity, there is little hope for the cause of a progressive, living, native, domestic architecture in these piles of plans and elevations run off by the yard by men who care little or nothing for architecture as a fine art. The small minority of our architects who are able to design well-planned, livable, and thoroughly delightful farmhouses are as a rule too constantly and profitably employed with large and important commissions to be interested in the sort of building to which the humble means of even the wealthier farmers would confine him. So that unless the devil is fought with fire and the best

ideas of our ablest designers and thinkers are placed in the hands of the farm people, the illiterate and unscrupulous plan-merchant, who never lets art interfere with business, will continue to be the only architect the farmer

carpenter is no longer the painstaking student of the most dignified architectural precedent, as he often was in colonial days. He makes plans in order to get "jobs," and gets all the money he can out of them. In



A WISCONSIN FARMHOUSE.

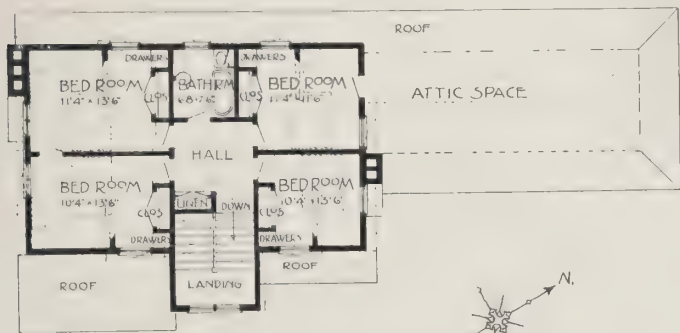
knows until there is a larger and more intelligent demand for beauty in the home and its surroundings.

In our present intensely commercial period the village

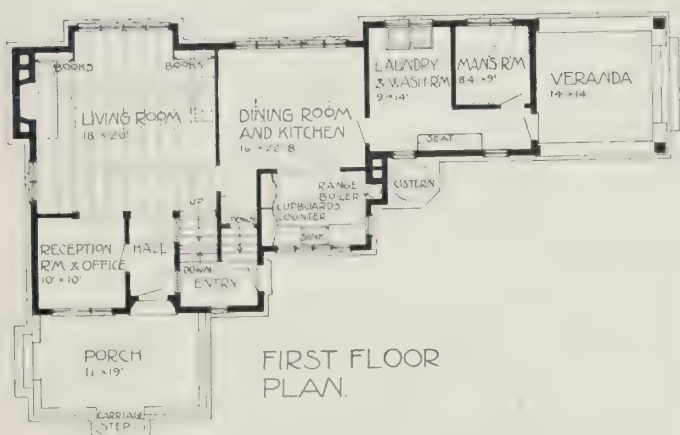
New England, until recently, the traditions of earlier days have been followed in a humble way in farmhouse work; but now, even there, the same beastly "modern" abominations of the lathe and the band-saw are beginning to appear in all their brazen impudence.

In presenting some of my own designs for American farmhouses, as suggesting a few of the possibilities which the problem offers to the architect, a very few words of explanation will suffice. The "Fieldstone Farmhouse," the "Wisconsin Farmhouse," and the "Southern Farmhouse" (planned for the more temperate Southern regions) were recently published in two well-known farm journals, and have also appeared in several of the late architectural club catalogues and in *Brush and Pencil*. They were intended for rather small families, keeping not more than one servant, and would require the male help in some cases to occupy separate quarters near by, this being a good plan on very large farms where several hired hands are steadily employed. One or two men may be accommodated in the house, and would commonly be treated as members of the family, where help of a superior class can be had.

The only saving in labor and expense made possible by providing extensive quarters for help in part of a farmhouse is in heating them in winter, although even here a central steam or hot water apparatus instead of a hot air furnace would wipe out even this consideration. In the average Northern farmhouse neither the man's room nor the family bed rooms have any proper provisions for heating. Moreover, in mixed communities, or where rough, menial, or uncongenial help has to be employed, the family life is much better and freer where the



SECOND FLOOR PLAN



FIRST FLOOR PLAN.

PLANS OF WISCONSIN FARMHOUSE.



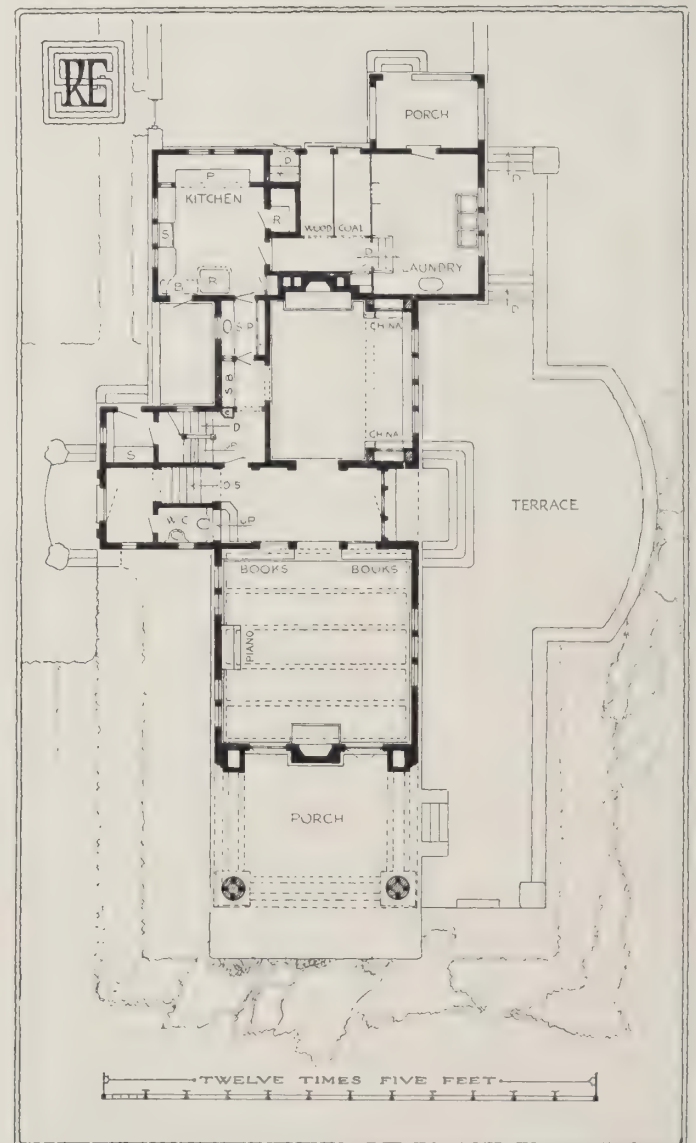
A LAKESIDE FARMHOUSE.

hands are cared for separately. There are ideal American farming communities where as many as half a dozen hired men and boys, friends or relatives of the patriarchal employer, sleep and eat together, under one roof, in the most congenial and democratic fashion, — all equals and all good, wholesome, intelligent members of one big family, in which all cooperate for the general good. Such big families require generous housing, but are the exception rather than the rule. For hired help under such conditions, a separate wing with bed rooms on the ground floor, readily increased by lengthening or adding a second story, or both, as growing needs require, seems to be the best arrangement. A one-story house gives a large attic, which, if properly lighted and ventilated, also affords generous sleeping accommodations, which may be reached by a staircase direct from the entry by the men whose goings and comings would otherwise often disturb the family. The "Lakeside Farmhouse" was designed for one of those ideal situations of which architects love to dream, and which do actually exist in many parts of America. The building is intended to accommodate several boarders or city relatives during the summer, and suggests the country house rather than the ordinary farmhouse. The separate entrance for hired help with an enclosed staircase gives them a private thoroughfare to their rooms in the attic, where rough or menial help is employed. This drawing was made primarily to show the possibilities of beautiful farmhouse sites. The "Wisconsin Farmhouse" presents the pleasing low roof lines of the story and a half cottage, yet avoids the practical shortcomings of that type; the floor beams overhang to receive the rafter thrust, while the bed rooms each with windows in two walls carried close to ceiling and fitted with casement sash give the best possible ventilation, and insure cool rooms at night if there be any air stirring. The kitchen is simply a large alcove in the dining room. This compact arrangement completely screened from the living room makes the work very simple, everything being within easy reach; while any steam or fumes from the cooking range are cut off by a low arch about 6 ft. above the floor, and drawn off by a large ventilating register in the chimney. The rear porch may be enclosed with wire screens and meals served there in hot weather and on gala occasions, or where family and help do not mix at meals; the living room readily becomes dining room as well.

In the library or office, quiet and privacy may be had for study, correspondence, receiving friends, keeping farm and household accounts, and transacting farm business.

With the exception of the Fieldstone Farmhouse in which brick might be used quite as effectively as stone, the construction is of the balloon frame type, with a covering of cement rough cast on metal lath. With some slight modifications each could be built of brick, and thereby made more durable and beautiful at a small increase of cost, which would be fully offset by the substantial and permanent character of the house thus obtained. The days of the flimsy, "clapboarded" frame house are numbered, and it is to be hoped that the farmers who seem to prefer bricks wherever they can be cheaply obtained will realize that solid brick construction, proof against weather, growing mellow rather than dilapidated with age, is the best investment in the long run.

The other illustrations, mere camera notes, present interesting and typical examples of native American, rural architecture. Note the picturesque homeliness of the northern New England type — the best built and the most clearly defined and, perhaps, the best suited to Northern conditions. Here, and occasionally in the West where New Englanders have settled, the typical farmhouse is a long rambling structure, with the sacred "parlor" and guest room at one end and the barns and workshop at the other. In Northern regions where old-fashioned winters with deep drifting snows still reign,



FIRST FLOOR, LAKESIDE FARMHOUSE.



A LAKESIDE FARMHOUSE.

the convenience and comfort of this type are obvious. Of course, a separate and larger barn for stock is usually required, although examples may be seen where, through various sheds, a house is united with a great barn, large enough for all purposes. A few changes in the plans of these rambling farmhouses would eliminate the most serious defects now found in even the best of these buildings. These defects, some of which are due to perverted ways of living, are: first, a connection between kitchen and barn too short or inadequately shut off against odors; second, incomplete or inconvenient laundry, fuel, pantry, and other working arrangements; third, lack of bath room and sanitary conveniences; fourth, and perhaps most serious of all, lack of a large, sunny, attractive living room or combined dining and living room in place of the frigid, old-fashioned state parlor held sacred to memorable occasions, such as weddings and funerals. One needed feature, seldom provided, is a roomy entry, set apart for the male members of the household in which they may remove dirty boots and overalls, and clean themselves up properly before entering the kitchen or living rooms. Often toilet and wardrobe conveniences may be provided in the laundry.

In planning and placing a house in a sharply rolling country, such advantage of the site often may be taken as to provide easy and convenient access to the house and barn on two levels, giving an added charm to its various aspects seldom found in the level prairies.

Concerning the use of brick in the construction of American farm buildings, there is little to be said for the reason that the cheapness and availability of wooden construction have been sufficient cause hitherto for the almost universal use of wood. Scarcity of small local

brick kilns and scarcity of masons have been a natural accompaniment of the abundance of saw-mill products. Substantially built farmhouses of brick are quite common in parts of Ohio and Indiana, and they will be found here and there in Illinois, Michigan, and Wisconsin within fifty miles of brick-making centers. Some of the most interesting examples of brick farm buildings are to be found in New England, where the English colonists brought from across the



SECOND FLOOR, LAKESIDE FARMHOUSE.

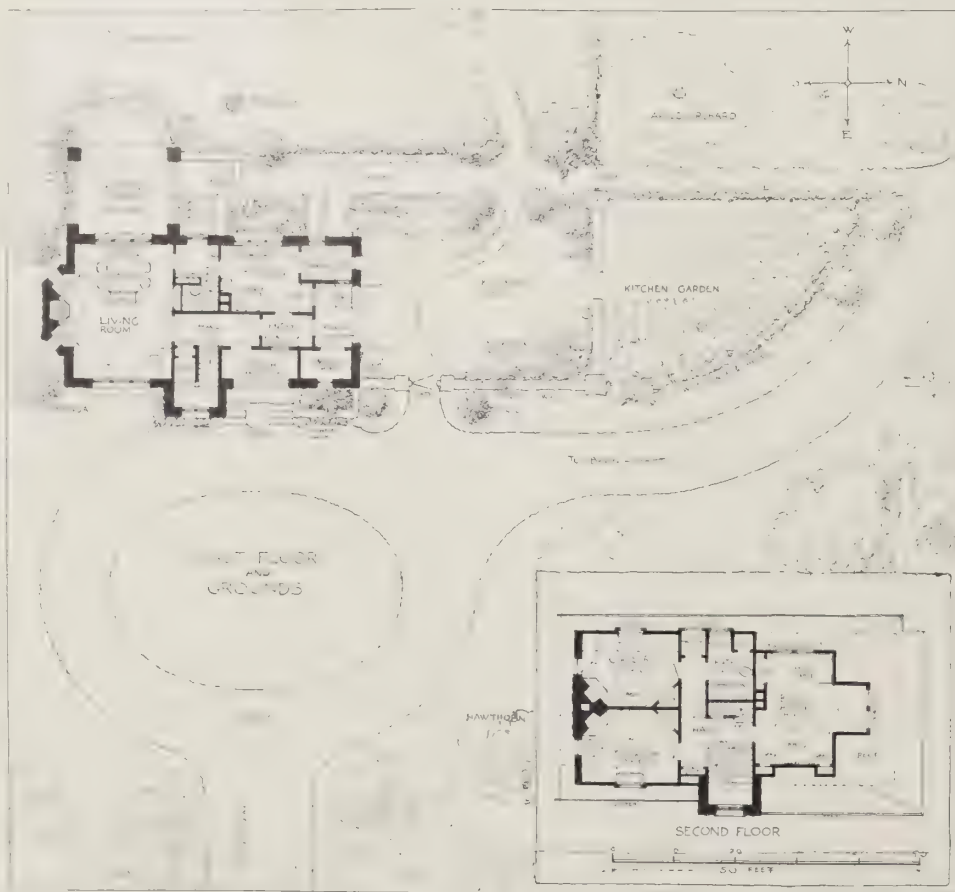


A FIELDSTONE FARMHOUSE.

sea their predilection for substantial and enduring building materials. In order to build according to the ways of their forefathers, they took a great deal of trouble to secure bricks, either by importation, or by burning their own bricks where stone was not available or suitable for the purpose. The accompanying sketch of the old "Garrison House" or "Spencer House" at old Newbury, Mass., supposed to have been built prior to 1640, and the "Lee Farm" on the Kennebec River, below Bath, Me., represent two interesting examples, both of which are standing today as proofs of the durability of burnt clay laid in very ordinary mortar. The bricks in the "porch" (so-called) of the

former are carefully molded by hand, and it is quite probable that they were imported. The walls of the "Lee Farm," now more than one hundred years old, are over two feet thick, and the bricks, to judge from their softness, were burned near by long before there were any regular kilns in the Pine Tree State.

Altogether, the farmhouse problem in this country is a most interesting one; and as the cheap and temporary houses of the first settlers and their immediate descendants fall into dilapidation and decay, it is to be hoped that we shall enter on an era of more substantial, livable, and attractive homes for the millions who till the soil and form the backbone of the nation.



PLANS, A FIELDSTONE FARMHOUSE.

“The Brickbuilder” Competition.

III.

A FARMHOUSE.

CRITICISM AND AWARD BY R. CLIPSTON STURGIS.

THE drawings submitted in this competition seemed to me of unusual excellence, and a large number show thought and study. It was sufficiently difficult to select a half dozen to place above the rest, and it was still more difficult to rank these. In considering the problem, there were three main points: first, the general layout,—the arrangement of the buildings on the land, their relation to each other, for convenience and for aspect, both very important in a farm, and their grouping as an architectural composition; second, the plans in detail,—the arrangement of the rooms in the house, to give to the farmer some measure of retirement, with pleasant exposure and outlook, and yet give him easy supervision of his farm buildings, and the arrangement of the barn to make the care of the stock easy, and to give them good quarters, and to provide accommodation for the necessary implements and for the farm produce; third, the exterior treatment, which should be simple and farm-like in character, and yet substantial and pleasing.

“Countryman” was awarded the first place, because on the three counts he appeared to have done most toward solving the various problems, but there is certainly a very narrow margin between his design and the two placed second and third.

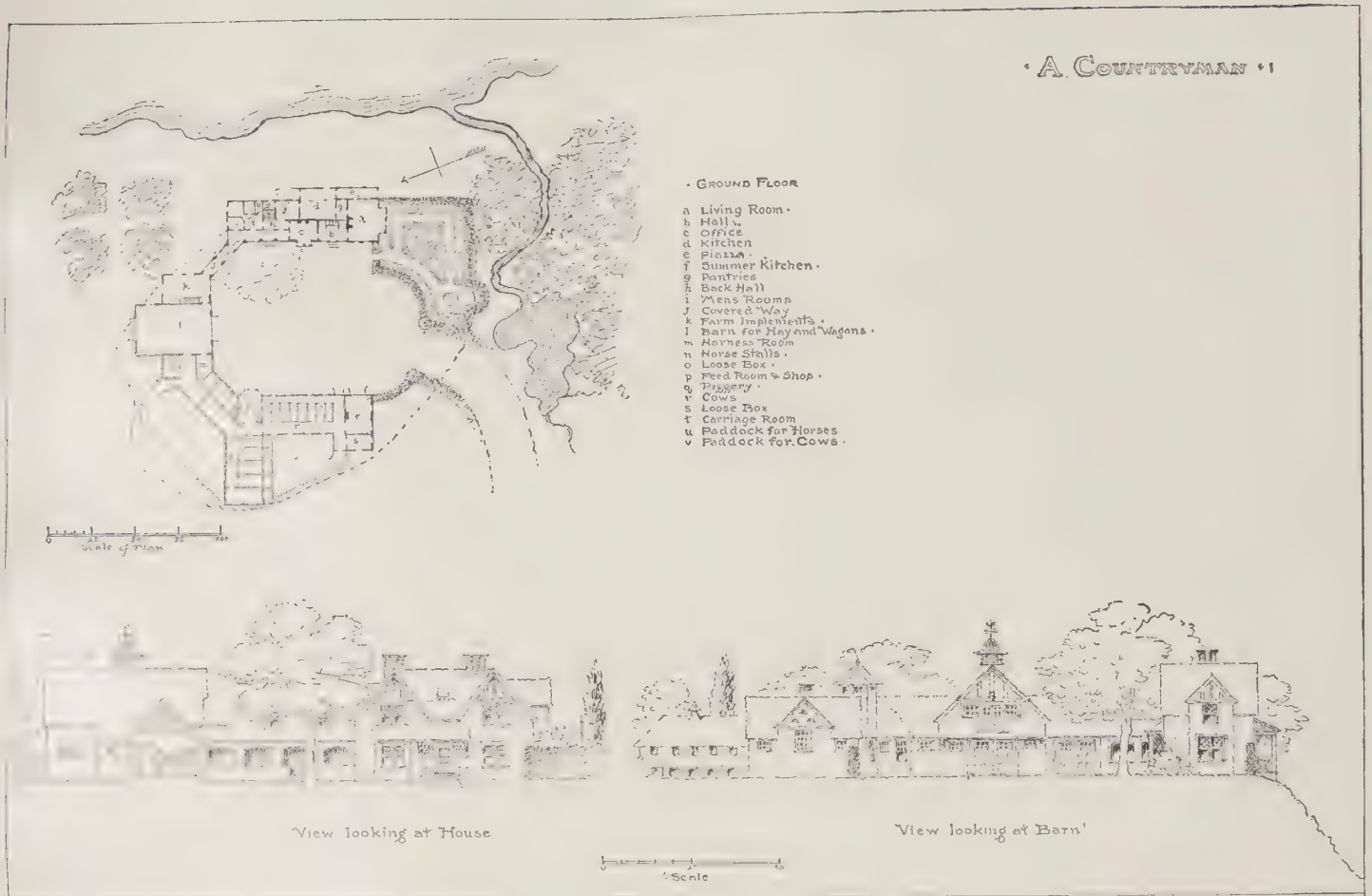
At first sight “Countryman’s” weak rendering prejudices one against him; but if one studies the design carefully he is forced to admit that his general arrangement of the buildings could hardly be improved upon. It is unquestionably a farm. The great farmyard is the central feature, and the buildings are grouped about it so as to give the house the best position for view and aspect, and yet leave it in command of the barn; and the barn stretches out to face south and southeast. The garden occupies the right place, not too important, but easy of access and away from the more every-day side of the establishment. If “Countryman” had merely extended his hedge to enclose a small front door yard, it would have seemed a quite perfect arrangement. Then the house is well planned, all the rooms are pleasant and sunny, and the men’s rooms occupy the right place at the north end toward the barn. The summer kitchen is the only doubtful room; a cooler position with more cross ventilation would have been preferable. The barn is excellently planned, horses, cows, and pigs grouped round a working center, with adjacent paddocks. One would have liked the carriage room a little nearer the horses, and the paddocks are hardly sunny enough for winter, which is the time they would be most used. The exterior is the weakest point of the whole design, but even this is largely due to the feeble drawing. If well executed on these very lines it would be a pleasing group, and the only doubt is whether the designer knew how good his design might be.

“In Haste” is placed second. His general plan is not quite as good as the first. It is a little more like an accidental grouping than a studied arrangement, but it has all the charm which such a plan often has. There is, perhaps, a little too much of elegance in the forecourt treatment of the ground between house and barn, emphasizing unduly the unbusinesslike side of the place. The house plan is first-rate, convenient, comfortable, homelike, and the barn is fairly well arranged; but here again the real farm is a bit in the background, with scant space, rather out of the way, allotted to the wagons and implements. The paddocks seem somewhat confused with sheds. The exterior is wholly charming and suitable; quite the best of the lot.

Third place is given to “Seigniory.” His general plan is quite different from either of the others. The buildings are not grouped around a center, but are rather two groups merely touching at one point. It is a perfectly logical and defensible scheme well carried out. It gives importance to the house, and yet places it where it is in easy communication with the barn. The approach to the house is very simple, and yet has a certain dignity, and the extension of the road straight across the front of the barn makes an excellent thoroughfare. The house is extremely well planned. The rooms are good, well placed, and in proper sequence; and the back porch, opening two ways, and the sheds and ice house show thought. The barn would be very good but for its exposure. The main face is southeast, and the central building, which is high, would cut off all sun in winter from the cow stable and cow yard. The reversal of stable yard and cow yard would have obviated this, but the pigs would then have been too close to the house. Approaching the main floor of the hay barn up an incline is always a good plan if grades suggest it, but as indicated here, it would mean a long run to give a grade sufficiently easy for hauling up heavy loads. The exterior is distinctly the weak point of this design, and the rendering is not sufficiently definite to explain the author’s intention. It suggests a brick or stone house cemented rather than an exposed brick wall, and one questions whether the gables are coped with stone or with brick, and whether the coping is flat or pitched. A few more strokes of the pen would have made this clear. It is well to save unnecessary labor, but unwise to omit anything which is essential.

“Reuben” receives first mention largely because of his very good exterior, charmingly rendered. It is not, however, a solution of the problem. It is not a farmer’s house and barn, but the house of a man of country tastes, who, besides his horses and carriages, keeps some cows and pigs. The “barn” is really a stable with a cow barn attached. There is no great space for storing crops, nor for the wagons and implements necessary to farm work. The garden, placed between house and barn, adds further to this impression. The man who owned this charming place would not have the farm hands sleep in his house.

The second mention is given to “Eli,” a good sensible design; house and barn well placed and both fairly well planned, an exterior which is sound commonsense sort of work and which would look well in execution.



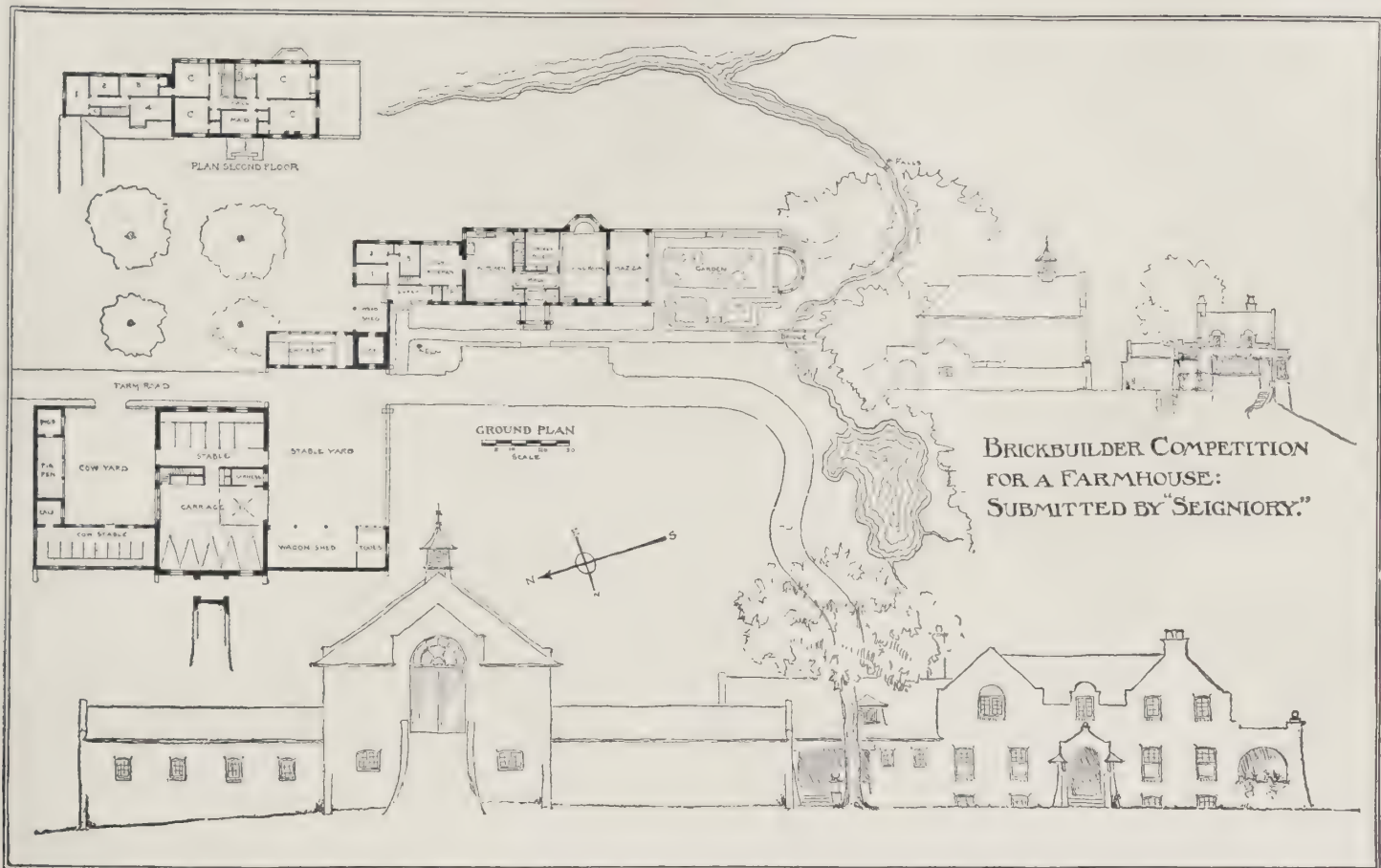
FIRST PRIZE DESIGN.

WILFRED A. NORRIS, CAMBRIDGE, MASS.



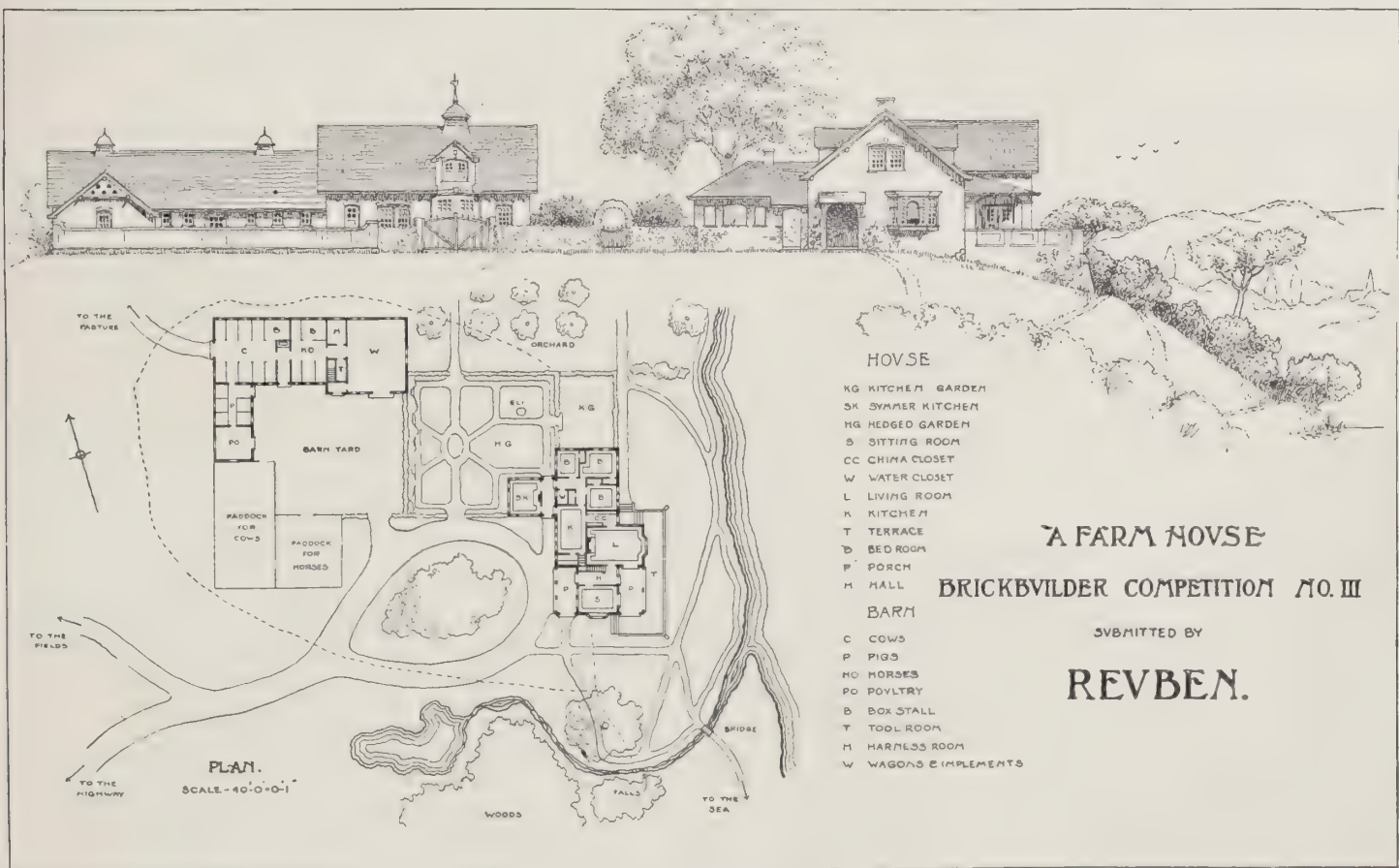
SECOND PRIZE DESIGN.

WILLIAM L. PHILLIPS, ROCHESTER, N. Y.



THIRD PRIZE DESIGN.

HENRY LOOMIS CURTIS, PHILADELPHIA, PA.

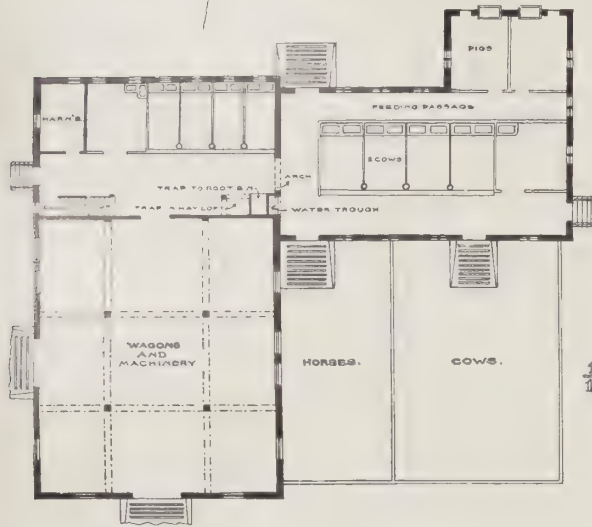
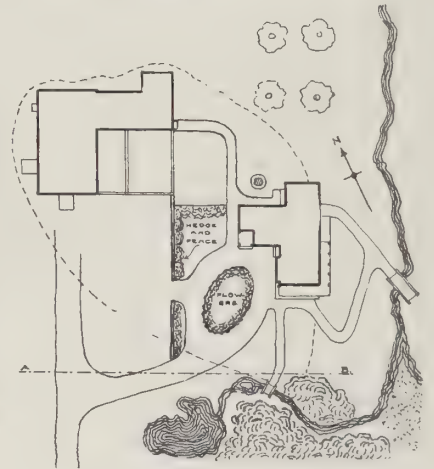
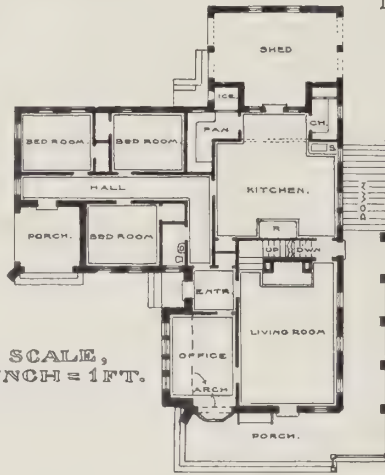


FIRST MENTION.

GEORGE P. KIEFER, MILWAUKEE, WIS.



ELEVATION AT A-B.

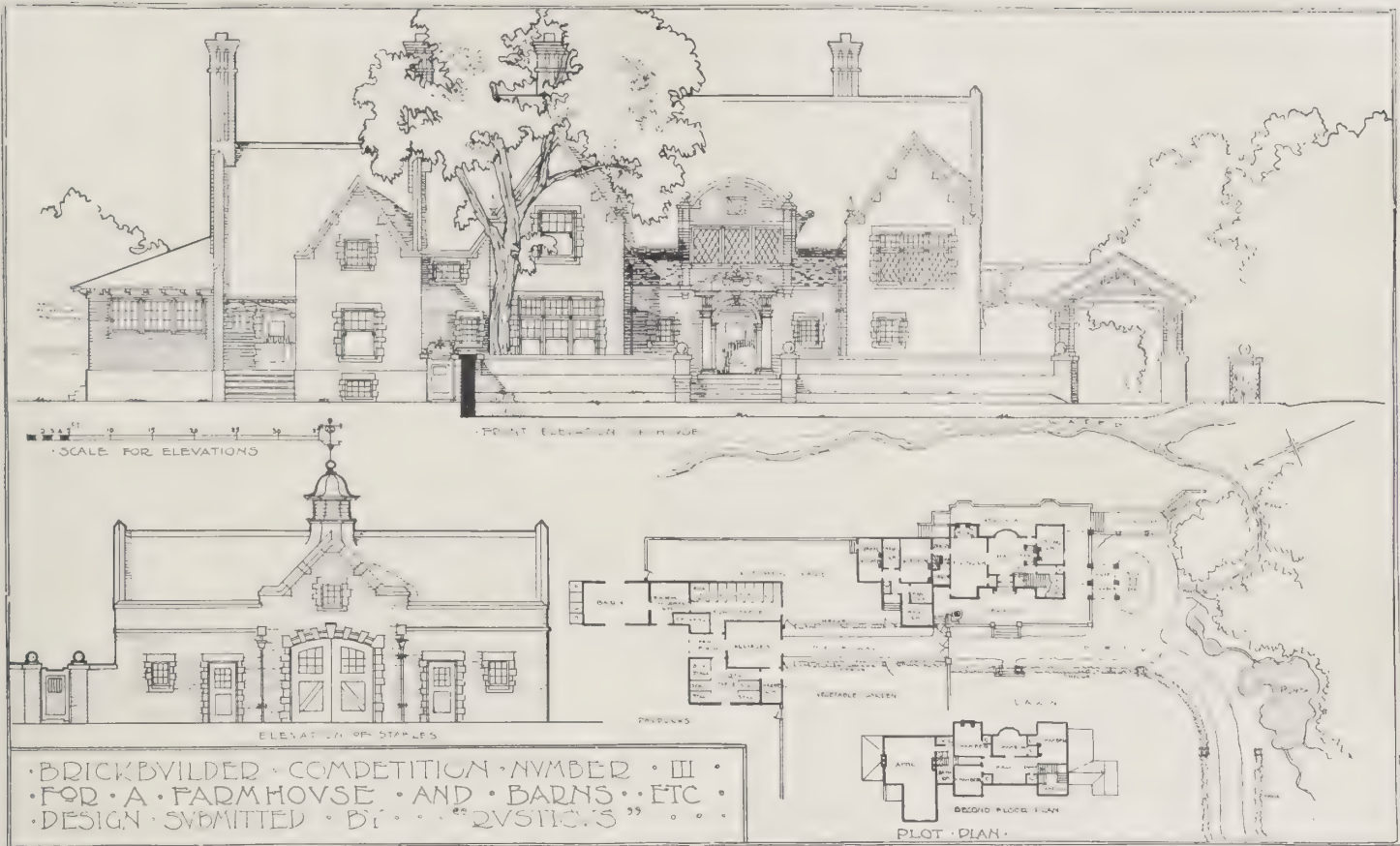
BRICKBUILDER
FARMHOUSE COMPETITION.
"ELI".SCALE,
 $\frac{1}{16}$ INCH = 1 FT.

SECOND MENTION.

WALTER W. BONNS, MILWAUKEE, WIS.



DESIGN SUBMITTED BY CHARLES W. KILLAM, BOSTON, MASS.



DESIGN SUBMITTED BY J. MELVILLE MILLER, BOSTON, MASS.



DESIGN SUBMITTED BY W. W. DE VEAUX, NEW YORK, N. Y.

Fire-proofing.

PRACTICAL FIRE TESTS.

THE numerous tests that have been conducted by the British Fire Prevention Committee since its inception in 1897, after the great Cripplegate fire, supply much valuable information on the relative fire-resisting qualities of various materials used in building work, and, as the committee have no mercenary motives, the results obtained by them may be regarded as being perfectly accurate and trustworthy. The committee's testing station is at the side of Regent's Canal, London, and their tests are conducted in brick huts 10 ft. square inside, which are supplied with gas through large mains. The temperatures are recorded by means of two Roberts-Austen pyrometers, connected with the huts by wires.

In these articles it is proposed to deal with the fire tests that have been made with different kinds of ceilings, columns, doors, fire curtains, floors, glazing, partitions, protective coverings, and non-inflammable wood.

Ceilings. — Architects and builders have constantly before them the problem of protecting ordinary residential property against that rapid spread of fire common to buildings where the ordinary partition and the ordinary floor are chiefly used. As the substitution of a solid floor or partition would be too costly, attempts are made to find something which will supersede the usual lath and plaster covering used for ceilings and will check the fire sufficiently to give the inmates a chance of escape. As yet only two ceilings have been tested by the committee, — one made by the Asbestos and Asbestic Company, Ltd., of London, and the other by Messrs. D. Anderson & Son, Ltd., and J. C. Broadbent & Co., Ltd., of London. The first ceiling was constructed with 2 by 8 in. spruce joists, spaced at 15-in. centers, with two rows of solid 2 by 8 in. bridging; the flooring was of 1-in. boards. Laths of St. Petersburg fir, rent or split, were used, and were spaced $\frac{3}{8}$ in. apart. The plaster consisted of 350 pounds of Danville asbestic plaster to 2 bushels of Stamford graystone lime slaked in 50 gallons of water; a layer $1\frac{1}{8}$ in. thick was put on, and the plaster was brought down the walls about 6 ins., forming a cove. The area of the ceiling was 100 ft. in the clear. Three weeks (spring) were allowed for construction and drying. The object of the test was to record the effect of a smoldering fire of fifteen minutes' duration at a temperature not exceeding 500 degs. Fahr., followed by a fire of half an hour, gradually increasing from 500 degs. Fahr. to 1,500 degs. Fahr., followed suddenly by the application of water for three minutes. The following is a summary of the effect: No perceptible difference in the ceiling was observed during the progress of the test. The application of water caused no injury to the ceiling. No portion of it fell down, either during or after the test. When examined, after the test, cracks had developed over the surface of the ceiling, many about $\frac{1}{16}$ in. wide. Some of the wood laths were charred, but none had ignited.

The second ceiling tested consisted of 3 by 9 in. deal joists, spaced at 19-in. centers, and resting $4\frac{1}{2}$ ins. on the walls at each end. A slag-wool slab 1 in. thick and 5 ins. wide was screwed at the end of each joist on both sides. The flooring was of $\frac{7}{8}$ in. boards, and the ceiling was formed of slag-wool slabs $1\frac{3}{4}$ ins. thick (reduced to $1\frac{1}{2}$ ins. thick when pressed into position, as the slabs consisted of slag-wool enclosed between galvanized wire netting). Round the walls of the hut a wood molding was fixed, forming a cornice and covering the slag-wool which projected below the $\frac{7}{8}$ in. match-boarding ceiling. The fire lasted an hour, the temperature gradually increasing to 1,800 degs. Fahr., followed by the immediate application of water for two minutes. When examined after the test, the joists and flooring were sound and not damaged by fire.

Columns. — Though certain fire tests had been made at Hamburg and New York, there had only been one attempt at really systematic and independent testing, namely, at Brooklyn, U. S. A.; and the committee thought proper in October, 1898, to publish the results of the Brooklyn tests with unprotected columns. One test was made with a Carnegie steel-box channel column about 14 ft. high by 12 by 10 ins.; the plates were $\frac{1}{4}$ in. thick. The temperature was raised rapidly, and the column showed signs of failing when it became "red," there being then a pressure on it of 48.06 tons. Strength by Gordon's formula: Breaking strength per square inch, 45,630 lbs.; area of cross-section, 15 sq. ins.; breaking load, $15 \times 45,630$, 684,450 lbs. (342 tons). Actual greatest load, cold, 141.4 tons, with no change of form. Another test was made with a hollow cast-iron column of 8-in. external diameter, 1-in. metal, and about 13 ft. high. This column also began to fail when it became "red," the pressure being then 84.8 tons. The strength by Gordon's formula was as follows: Breaking strength, 902,000 lbs.; safe load, $\frac{1}{2} \times 902,000$, 180,400 lbs. (90.2 tons). In a test with another cast-iron column a jet of water from a $\frac{3}{4}$ in. nozzle was thrown on it several times after heating it. The last time the heat was raised to 1,300 deg., Fahr., the iron being then a "bright red" color. The column was beginning to yield by bending just before the last application of water; but it was apparently unaffected by the water.

Doors. — A number of fire tests with doors have been made by the committee, two doors of different woods being generally tested together. The first test was with a solid-framed door of 2-in. teak. The door was 6 ft. by 2 ft. 5 ins., and was hung in a 4 by 3 in. rebated teak frame to open outwards; the test lasted one hour, the temperature gradually increasing to 2,000 deg. Fahr. After twenty-four minutes flame showed between the bottom edge of the door and the sill, and at the end of the hour flame burst through all joints, the door collapsing five minutes afterwards. On another occasion a $1\frac{3}{8}$ in. four-paneled pine door and a $1\frac{7}{8}$ in. four-paneled pine door were tested together, the former being 6 ft. 6 ins. by 2 ft. 7 ins., and the latter 6 ft. 6 ins. by 2 ft. 4 ins.; both were hung in 4 by 3 in. rebated frames to open outwards. The fire broke through the $1\frac{3}{8}$ in. door in nineteen minutes, at a temperature of about

1,400 deg. Fahr., and this door was destroyed in twenty-two minutes. The fire broke through the $1\frac{7}{8}$ in. door in twenty minutes, at a temperature of about 1,600 deg. Fahr., and the door collapsed in twenty-six minutes. From the foregoing test it may be taken that the life of ordinary pine doors in a fire created, say, in a room where the windows have been broken and a draught created is about twenty minutes, and the additional $\frac{1}{2}$ in. in the thickness of the material does not seem to make much difference. It will be noted that the teak door stood an hour under more severe conditions.

A most interesting test made by the committee in June of last year was with a 2-in. wood door covered with tinned steel plates (26 S. W. G.) and an iron door with a frame $\frac{3}{4}$ in. thick and panels $\frac{1}{4}$ in. thick. The door openings were 3 ft. 9 ins. by 7 ft. 3 ins., and the doors were hung to open inwards (towards the fire, which lasted one hour and reached 2,000 deg. Fahr.). The following is a summary of the effect: The armored door remained in position, though it was much buckled and bulged, and the upper part gradually inclined inwards considerably, permitting the passage of flame. The first spurt of flame over the top of the door was seen after five minutes. The iron door remained in position throughout the test, but became red hot, buckled and warped considerably, together with its rebated frame. The first spurt of flame between door and frame was seen after twenty minutes. It should be mentioned that whilst the iron door was hung in a rebated frame, the armored door fitted closely against the face of the brick wall and had a 3-in. overlap at the sides and top.

Oak and teak doors were next tested together. Each was 2 ins. thick with solid panels, and the door opening was 3 ft. 3 ins. by 6 ft. 9 ins. The fire was a fierce one and lasted an hour. In five minutes flame appeared between the frame and top rail of the teak door, and in fifty-five minutes it had extended to the bottom of the upper panels, flame also coming through the joints between the muntin and lower panels. In fifty-eight minutes the door collapsed and fell inwards. The oak door stood the test better, for it was thirty minutes before flame got through between the frame and top rail. In forty-four minutes the fire came through the lock rail; in fifty-five minutes the four panels fell outwards, and in fifty-nine minutes the remainder of the door fell. As both are used so extensively, it is important to know whether a door of pitch-pine will resist a fire for a longer time than one of deal. The doors tested by the committee were 2 ins. thick, framed, had solid panels, and opened inwards on the fire side. It was found that one withstood the fire almost as well as the other, though the pitch-pine door was slightly the better. It was twenty minutes before flame appeared over the top rail of this door, whereas three minutes before the flame had come through this part of the deal door. When fifty minutes had expired the upper panels and muntin of the pine door fell out, and fire was seen through a lower panel of the deal door; both doors collapsed entirely after fifty-seven minutes.

A Honduras mahogany door and a poplar door, both 2 ins. thick, framed, with solid panels, were next tested. This proved the former to be much more fire-resisting

than the latter. In five minutes flame came through the joint between the head and frame of the poplar door; in ten minutes the door was badly twisted; in twenty-four minutes the top west panel fell in; and in thirty-six minutes the whole door collapsed. On the other hand, it was twenty-six minutes before the flame became continuous along the top rail of the mahogany door, and this door did not fall till after forty-nine minutes.

An hour's test with a 2-in. framed Austrian oak door and a similar door of American walnut showed that the oak was the better. The first spurt of flame appeared through the walnut door in fifteen minutes; but this did not take place till after thirty-three minutes on the oak door. In forty-two minutes flame came through the joint between the top muntin and upper east panel of the walnut door; in forty-five minutes the lower west panel of the oak door fell out; in fifty-five minutes this door collapsed; and three minutes later the walnut door collapsed.

So much has been said about the advantages of doors constructed in three thicknesses of boarding that the committee has decided to conduct a series of tests with such doors in order that they may collect some authentic data regarding their resistance to fire. The first test of the series was with a $2\frac{5}{8}$ in. archangel deal door and a similar door of Quebec pine, both constructed in three thicknesses and hung to open inwards on to the fire side. In thirty-nine minutes flame appeared intermittingly over the top of the deal door, and in sixty-five minutes the upper part of this door was considerably burnt, and flame was seen through several small holes in its lower portion. The pine door stood better, for sixty minutes elapsed before flame appeared over the top of it; ten minutes later, after water had been applied, the two inner thicknesses were found to be practically burnt away, and the outer thickness (which was for the most part in position) was much damaged.

The following table summarizes the particulars given of these tests with doors:—

Material of Door.	Temperature in deg. Fahr.	First appearance of flame.	Result.
Teak, 2 in., solid framed	2,000	24 min.	Door collapsed after 65 minutes.
Pine, $1\frac{3}{8}$ in., four paneled	1,400	19 min.	Door destroyed in 22 minutes.
Pine, $1\frac{7}{8}$ in., four paneled	1,600	20 min.	Door destroyed in 26 minutes.
Armored, 2 in.	2,000	5 min.	Door remained in position, but was much buckled.
Iron, $\frac{3}{8}$ in. frame, $\frac{1}{4}$ in. panels	2,000	20 min.	Door remained in position, but was much buckled.
Pitch Pine, 2 in., solid panels	2,000	20 min.	Door collapsed after 57 minutes.
Deal, 2 in., solid panels	2,000	17 min.	" " " 57 minutes.
Honduras Mahogany, 2 in., solid panels	2,000	15 min.	" " " 49 minutes.
Poplar, 2 in., solid panels	2,000	5 min.	" " " 36 minutes.
Austrian Oak, 2 in., solid panels	2,000	33 min.	" " " 55 minutes.
American Walnut, 2 in., solid panels	2,000	15 min.	" " " 58 minutes.
Archangel Deal, $2\frac{5}{8}$ in., three thicknesses	2,000	39 min.	Upper part considerably burnt after 65 minutes and flame seen through several holes below.
Quebec Pine, $2\frac{5}{8}$ in., three thicknesses	2,000	60 min.	After 70 minutes two inner thicknesses burnt away, and outer one badly damaged.

Selected Miscellany.

NOTES FROM NEW YORK.

It is not surprising that I am obliged to report that the month just passed has been one of extreme dullness among architects and builders. No one expects to find an architect in his office during August, and if he does, considers himself lucky. Then, too, the man who has

Speaking of the architectural office boy reminds me of an incident which occurred in one of the large offices here. Plans were under way for a large building to be built by the Duchess de B——, and the drawings were all carefully labeled with her full title, *vis.*, Mme. the Duchess de B——, etc. On one of her visits, while she was in the private office with the architect, a certain drawing was wanted and the office boy was sent for it. Upon its arrival the architect expressed a doubt as to its being the one wanted, but the boy spoke up, "Oh, yes,



RESIDENCE OF AUSTIN CORBIN, 2D, SPOKANE, WASH.

Cutter & Malengren, Architects.

(Reproduced by courtesy of the Washington Brick, Lime and Manufacturing Company.)

invented a new material which will revolutionize building methods and do away with brick, plaster, wood, iron, and concrete deserves a rest, for his lot has been hard and he has not always had a satisfactory two hours' chat with the leading architects whom he has visited; in fact, more often he has simply left his card which the unfeeling architect used for memorandum or "ticking" purposes. Even the festive office boy seems to be subdued and has lost his ambition to make beautiful wash drawings of the orders.

sir, dats de one; don't you see her name on it, Mamie the Duchess?"

It is encouraging to be able to report that work upon the new public library will soon be begun. Bids for the foundation work have been presented to the Park Board, and the names of the successful bidders will be announced within a week.

Work upon the East River bridge, which was progress-



SPANDREL.

Conkling-Armstrong Terra-Cotta Company, makers.
Willis G. Hale, Architect.



MADE FOR THE NEW POST-OFFICE BUILDING AT NEW-
PORT, KY.

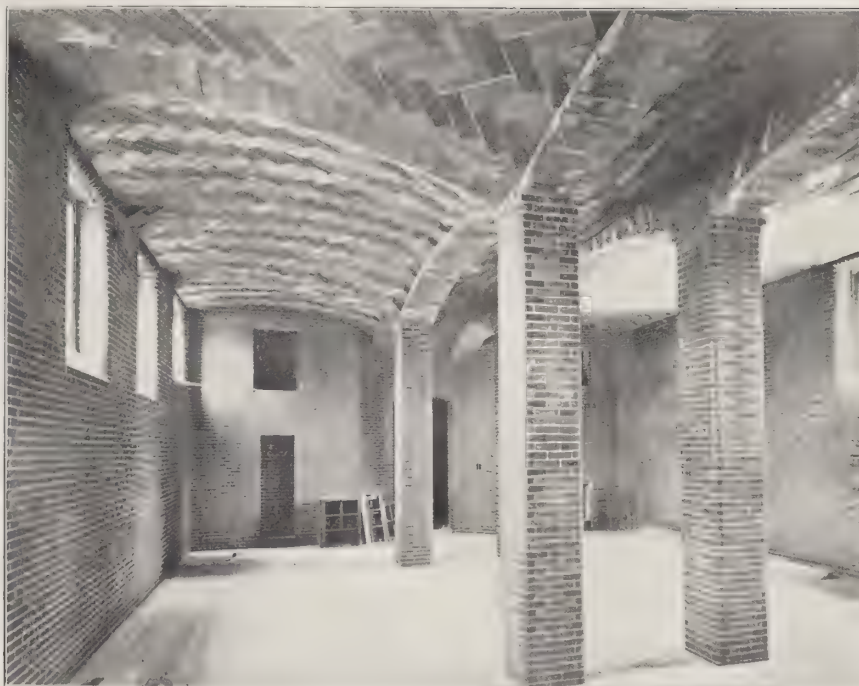
By the Winkle Terra-Cotta Company.

ing so favorably, has been stopped completely for the last three weeks owing to a strike.

While so much has been said of the construction of the high building above ground, comparatively little attention has been given by others than professional men to the vast engineering feats which must be accomplished before the building reaches the grade line, and it is a matter of surprise to the layman that so much time is spent, proportionately, upon the underground work. Upon study it will be found that the difficulties to be overcome are enormous and are never twice alike, and sometimes it takes just as long to put in the foundations for a tall building as to put up the entire superstructure. There are two very interesting examples of skilful foundation work which are now under way, and will amply repay any architect or builder who can spare a little time to study them. They are at the corner of Broad Street and Exchange Place, and at the corner of Wall and William Streets.

We take pardonable pride in the fact that the only American architects who were awarded gold medals at the Paris Exposition were New Yorkers, *viz.*, McKim, Mead & White and Boring & Tilton.

Bradford L. Gilbert, of this city, has been elected



FINISHED ROUGH TILE CEILINGS AND FLOORS, MASSACHUSETTS GENERAL HOSPITAL BUILDING, BOSTON.

Work executed by R. Guastavino Company,
Wheelwright & Haven, Architects.

Supervising Architect of the South Carolina Interstate and West Indian Exposition.

SOCIETY AND CLUB NEWS.

THE second monthly meeting of the Executive Board of the Architectural League of America was held August 7, 1900.

There were present Joseph C. Llewellyn, president; Richard E. Schmidt, vice-president; August C. Wilmanns, treasurer; Emil Lorch, corresponding secretary; Hugh M. G. Garden, recording secretary, and Prof. Newton A. Wells and Robert C. Spencer, Jr., members of the Board.

The chief business transacted was the assignment of the Standing Committees of the League as follows: Publicity and Promotion, the Chicago Architectural Club; Ethics and Competition Code, the Architectural League of New York; Exhibition Circuit, the Cleveland Architectural Club; Foreign Exhibit, the T Square Club, Philadelphia; Current Club Work, the St. Louis Architectural Club.

The Committee on Education will be appointed at a later date. The monthly meeting of the Executive Board is held the first Tuesday of each month at 5 o'clock, at 1218 Association Building, Chicago.



UNION TRUST AND SAVINGS BANK BUILDING, CINCINNATI, OHIO.

Built of gray Norman brick, made by the Columbus Brick and Terra-Cotta Company.
D. H. Burham & Co., Architects.

WE are in receipt of the Syllabus of the T Square Club, Philadelphia. The perennial enthusiasm which has placed this organization in the foremost ranks of our American architectural bodies is evidenced in every page of this most carefully prepared recital of what the T Square Club proposes to do. We confess to a feeling of wonder that a professional society of this sort can keep up the interest and so successfully bring into line the possibilities of its own members in the various functions which it undertakes. Most of our older architects will remember the day when the profession was limited in number, restricted in possibilities, and was



HOLYOKE DAM, HOLYOKE, MASS.

largely composed of men of mediocre talent, who were so afraid of each other and so fearful lest some one else would steal their ideas that anything like cooperation or *esprit de corps* was simply out of the question. It must be conceded that the work of bringing architects into harmony with each other and developing the solidarity of interests which so conduce to mutual growth is due, more than to any other one cause, to the work that has been accomplished by the architectural clubs which have sprung up so quickly since the move was first made less than twenty years ago. The maxim that it is not good for man to live alone certainly applies with force to the practice of architecture. It is from the mutual helpings, the keen but friendly competition of ideas, and the glowing friction of kindred minds that possibilities of real growth arise. The T Square Club Syllabus gives one an idea of how this cooperation may be brought about, and it ought to serve as a sort of campaign document for all the architectural clubs: for while the work varies in different cities, the objects are essentially the same everywhere. The calendar of competitions is of the widest scope, including ecclesiastical, suburban, commercial,

GROUP BY F. J. OSTERLING, ARCHITECT.
Perth Amboy Terra-Cotta Company, makers.

national, rural, civic, and municipal work, with competitions arranged in a most delightfully suggestive manner; and though the announcement for October 24 of a "fall Smoker and Bumper with an evening devoted to the cultivation of the muses" is suggestive of other things than *Vetruvius* or the *École des Beaux Arts*, we cannot but feel full sympathy with the introduction of the playful into the serious line of study which the program indicates. It is announced that the success of last year's



HOLYOKE DAM, HOLYOKE, MASS.

Showing construction in which Alpha Portland Cement (James A. Davis & Co., New England Agents) was used.

competitions has assured the continuance of the T Square Club Traveling Scholarship for the year 1901.

MISCELLANEOUS ITEMS.

The Fawcett Ventilated Fire-proof Floors are employed in the new government mint at Philadelphia.

The Hartford Faience Company, Hartford, Conn., is adding another new building to its rapidly growing plant.

G. W. Collignon, architect, Birmingham, Ala., has associated himself with W. C. Knighton for the practice of the profession, and would be glad to receive manufacturers' samples and catalogues.

In the Johnson Free Library, now being erected at Hackensack, N. J., Rossiter & Wright, architects, "The Herculean" terra-cotta floor arches, which require no

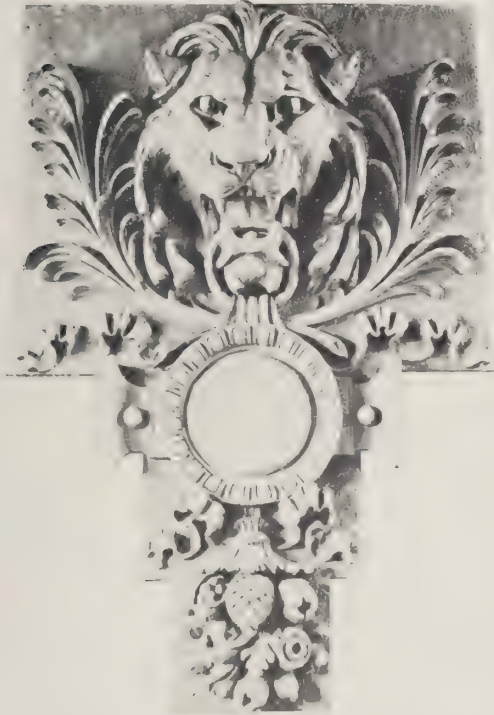
GROUP FOR THE UNION DEPOT, COLUMBUS, OHIO.
The Northwestern Terra-Cotta Company, makers.



PANEL BY J. E. R. CARPENTER, ARCHITECT.
Excelsior Terra-Cotta Company, makers.

iron beams, are being supplied by Henry Maurer & Sons, New York City.

The National Fire-proofing Company is delivering at the Broad Exchange Building, Broad and Exchange Streets, New York City (which will be one of the largest buildings in the world), eighteen thousand feet of fire-proofing daily.



PANEL BY GEORGE B. POST, ARCHITECT.
Atlantic Terra-Cotta Company, makers.

Building, Youngstown, Ohio; School Building, Glendale, Ohio; School Building, South Evanston, Ill.

E. E. Gorton, a graduate of the Ceramic Department of the Ohio State University, and for the past four years employed as chemist at the factory of the American



TERRA-COTTA PANEL.
New Jersey Terra-Cotta Company, makers.



RESIDENCE AT LOUISVILLE, KY.
Built of mottled white brick, made by the Ohio Mining and Manufacturing Company.
Mason Maury, Architect.

Terra-Cotta & Ceramic Company, has accepted a position as superintendent with the Ohio Mining and Manufacturing Company.

The following are among the orders which have been taken during August by the New York Architectural Terra-Cotta Company: Apartment House for Walter Stabler, East 39th Street, New York City; Yale Club House, West 44th Street, New York City; Bond Building, Washington, D. C.; Factory for The Benj. F. Smith Company, Pawtucket, R. I.; Schools Nos. 131 and 134, Brooklyn, N. Y.; Gurley Building, Troy, N. Y.

The illustration in our August number, entitled "Park Pavilion, Kansas City, Mo., Van Brunt & Howe, architects," should have been entitled "Pergola for the Board of Park Commissioners, Kansas City, Mo., John Van Brunt, architect." Again, the illustration, entitled "Panel for Post Office, Newport, Ky.," was, in fact, a



GARGOYLE BY MORGAN & WALL, ARCHITECTS.
St. Louis Terra-Cotta Company, makers.

panel designed by George D. Mason for the new office building of Berry Brothers at Detroit.

The Union Akron Cement Company, Buffalo, is supplying Akron Star Brand Cement on the following new



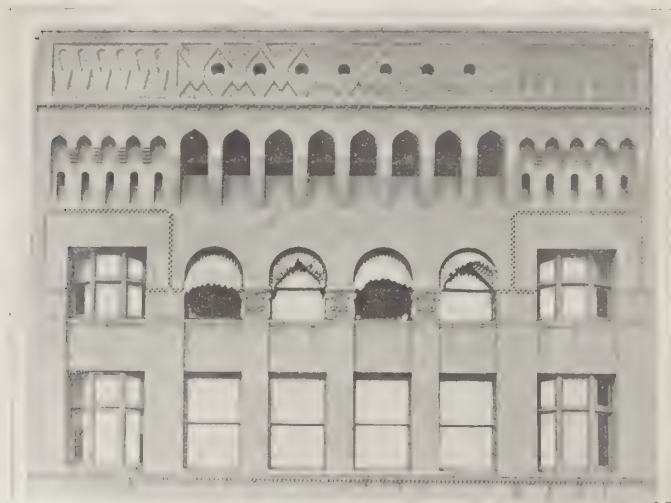
KEY FOR WINDOW BY SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

American Terra-Cotta and Ceramic Company, makers.

contracts: Addition to United States Sugar Refinery, Waukegan, Ill.; addition to the Illinois Sugar Refinery, Pekin, Ill.; building for the Genesee Stucco Works, Oakfield, N. Y.; Government Building, New York State Building, and Allbright Art Gallery, at the Pan-American Exhibition, Buffalo.

Charles Bacon, Boston agent for Sayre & Fisher Company, is supplying 300,000 brick for the new residence of Mrs. John L. Gardner, Fenway, Boston, W. T. Sears, architect; also brick on the following new contracts: Barristers Hall, Boston, Shepley, Rutan & Coolidge, architects; Gahm Building, Boston, Hartwell, Richardson & Driver, architects; Peabody residence, Fenway, Boston, Peabody & Stearns, architects; schoolhouse, Winchester, Mass., George F. Newton, architect.

The Penn Buff Brick and Tile Company, Newark, N. J., are supplying their "Blue Ridge" enamel brick



UPPER PORTION OF THE NASBY OFFICE BUILDING, TOLEDO, OHIO.

on the following new contracts: Front of Salinger Block, Rochester, N. H., W. B. Smith, architect; stable at Pride's Crossing, Mass., Little & Browne, architects; apartment house, 40th Street and Sixth Avenue, New York City, Charles A. Rich, architect; factory of the Weston Electrical Instrument Company, Waverly, N. J., Thomas Cressy, architect; St. Agnatin's College, New York City, Schickel & Ditmars, architects.

WANTED.—A first-class architectural draughtsman, designer, and colorist. Permanent position for the right party. Address, stating salary,

Harry E. Forney,
National Exchange Bank Bldg. Wheeling, W. Va.

MONTHLY SKETCH PROBLEM OF THE ATELIER FITZWILLIAM, AUDITORIUM BUILDING, CHICAGO.

MANAGED DIRECTLY BY F. J. FITZWILLIAM, A PUPIL OF
D'ESPOUY, WHO WON THE GRAND PRIX DE ROME
IN THE YEAR 1884.

THESE problems are to be worked up as sketches and not as finished drawings, the problem being spontaneous in execution and the detail in the nature of indication rather than that it should be laboriously drawn. One sketch problem is given each month from September to June. The program for the month of October, 1900, is announced below; send your design and \$1.00 at any time during the month of October, and on November 1 it will be remailed to you, postage prepaid, with a written detailed analysis critical of its faults and touching upon the merits of the design. In addition to this will be sent whatever prize (if any) its rank deserves.

For the month of October, 1900, there will be twenty-five cash prizes as follows: One first prize of \$30.00; two prizes of \$15.00 each; three prizes of \$10.00 each; four prizes of \$5.00 each; five prizes of \$3.00 each; ten prizes of \$2.00.

PROGRAM FOR OCTOBER. A COUNTRY CHAPEL.

A Protestant congregation in a rural district has decided to demolish the frame building now used by them as a place of worship, the object being to replace it with another structure of about the same size and seating capacity, but of more substantial material and modern design.

The congregation is one appreciative of good architecture and they can afford sound construction, but excessive cost should be avoided in the solution of this problem. The new chapel will stand alone in a clearing in the heart of a grove; being thus placed in total isolation from other buildings, the effect of each separate façade should be considered by the designer. Provision shall be made on the exterior of the chapel for erecting in a suitable manner a bell to announce the hours of service. This feature may be in the form of a tower or otherwise.

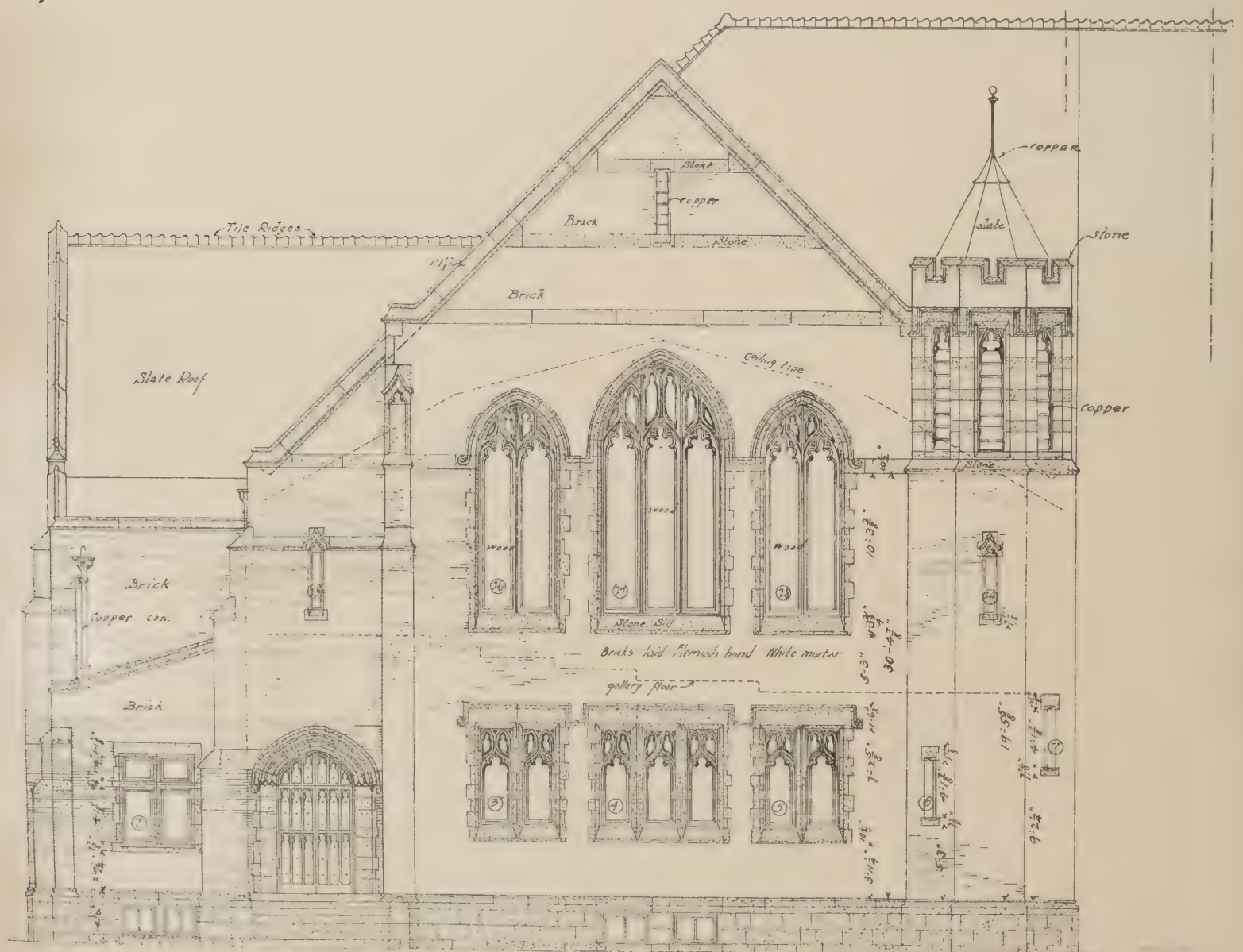
The church membership numbers 200, but seats for 100 additional shall be arranged. This capacity may be with or without a small gallery, bearing in mind that 85 ft. is the limit which the greatest dimension of the plan shall not exceed.

Drawings.—A floor plan, and one perspective showing the front and one side of the chapel, all at the scale of $\frac{3}{8}$ of an inch equals 1 ft. The rendering of the problem is left to the discretion of the designer, but the paper must be cut to the uniform size of 10 by 18 ins.

Send drawings unmounted to The Atelier Fitzwilliam on or before Oct. 31, 1900, and do not deviate from the instructions given above.



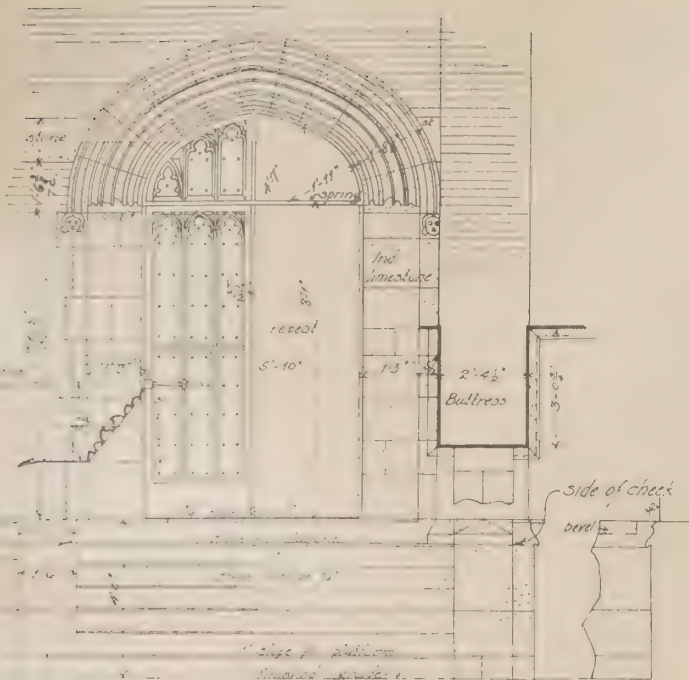
SIDE ELEVATION.



FRONT ELEVATION.

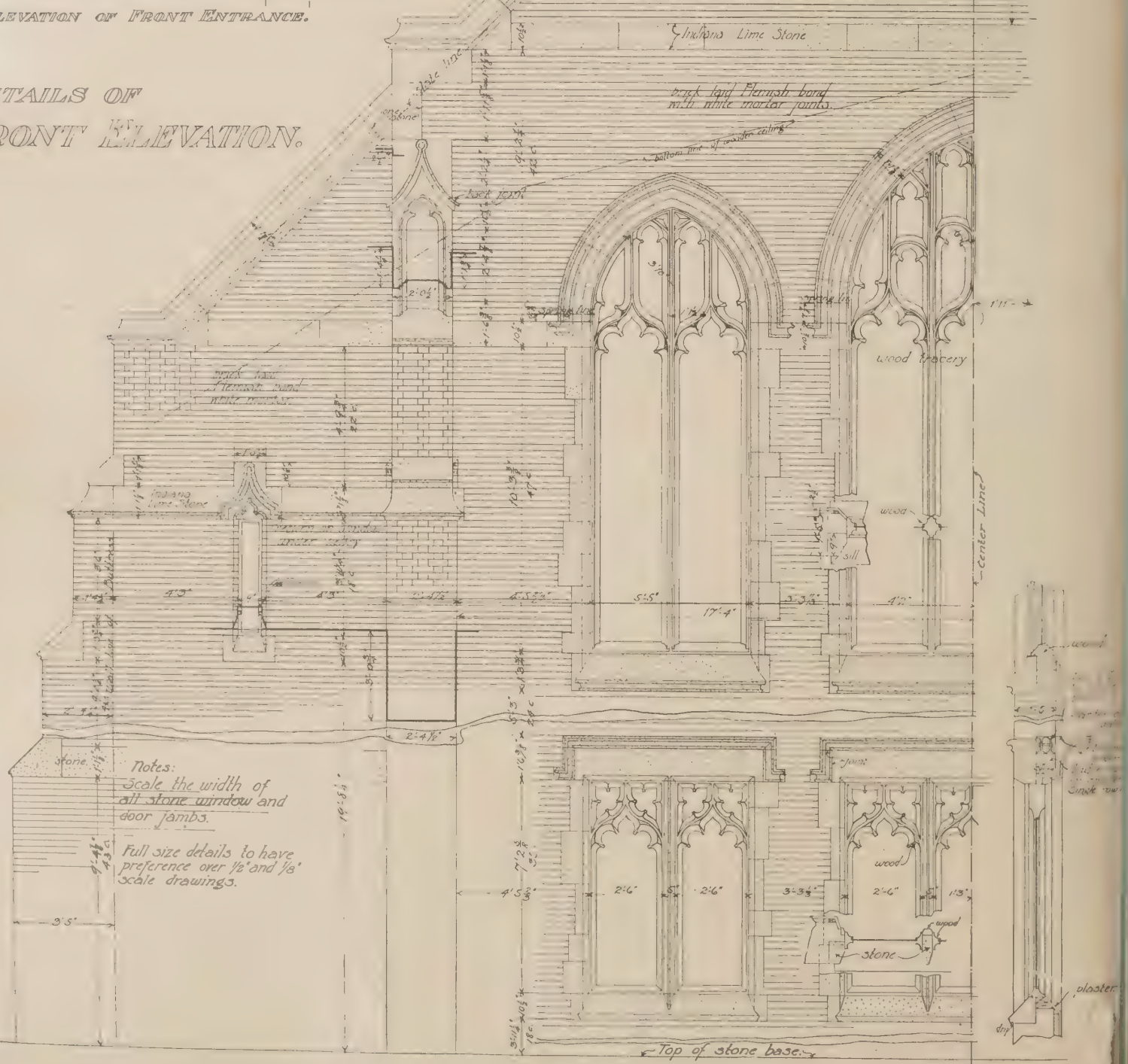
SUNDAY-SCHOOL BUILDING, FIRST BAPTIST CHURCH, FRANKLIN, PA.

BEEZER BROTHERS, ARCHITECTS.

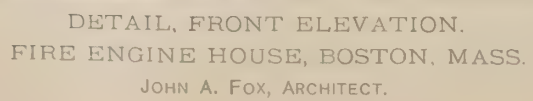


ELEVATION OF FRONT ENTRANCE.

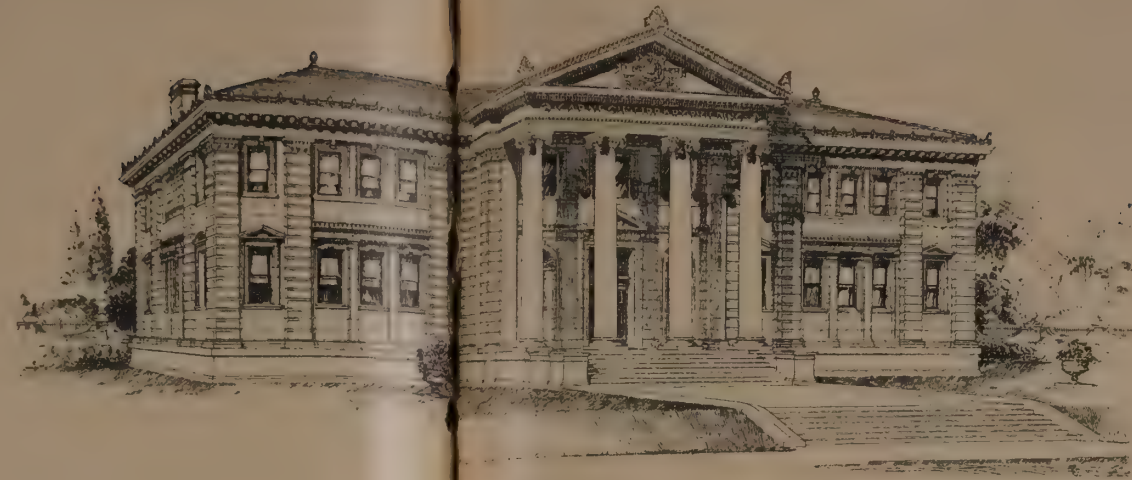
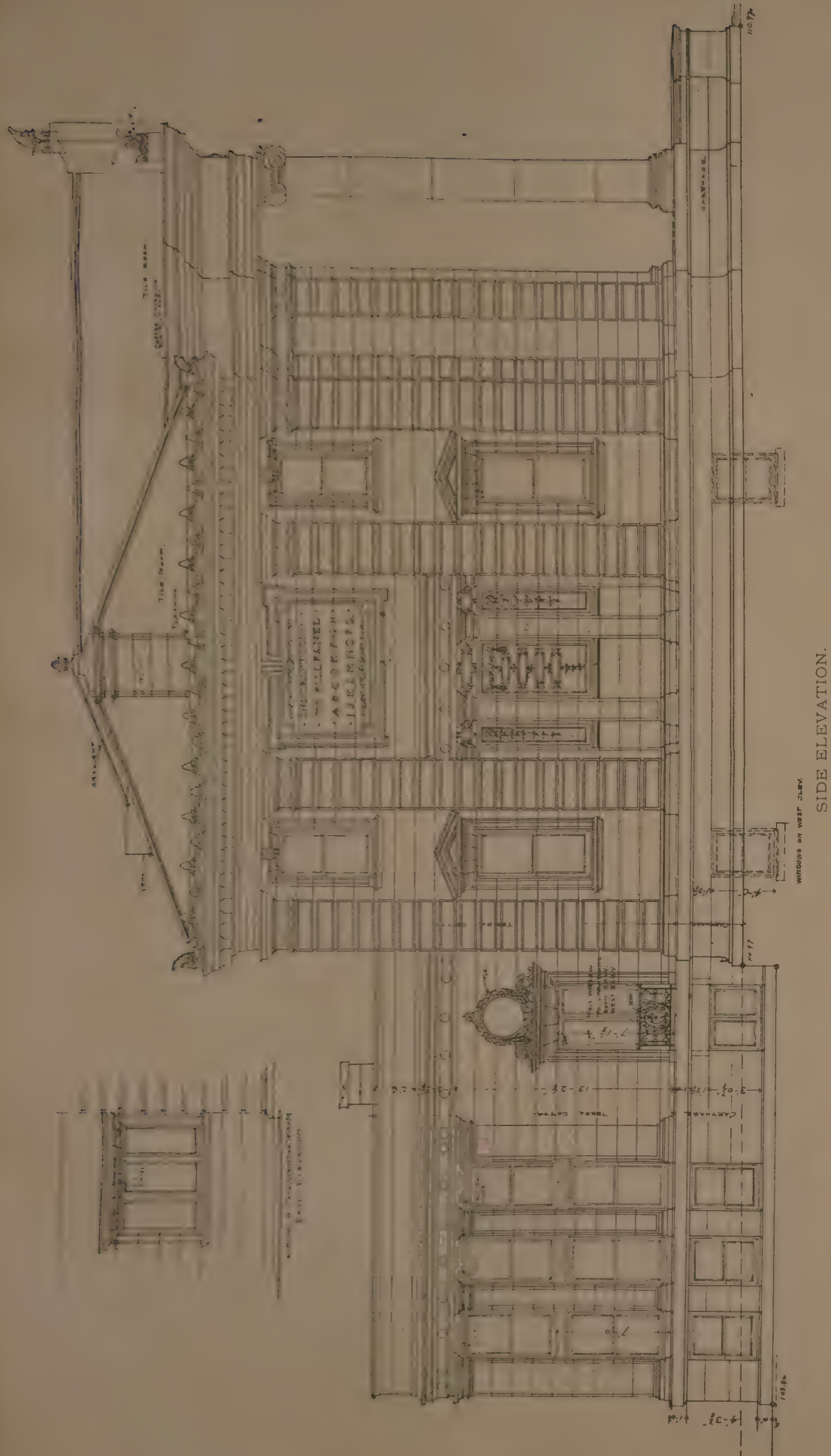
DETAILS OF
FRONT ELEVATION.



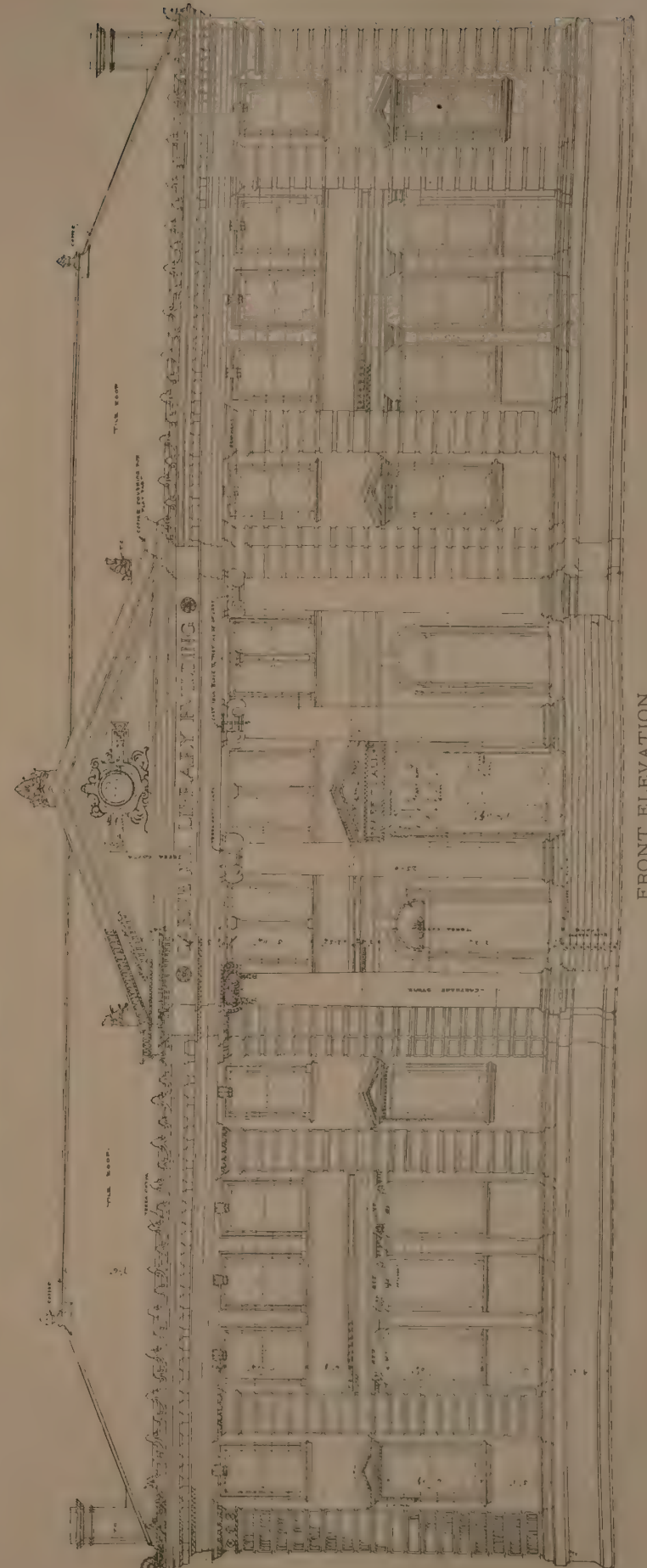
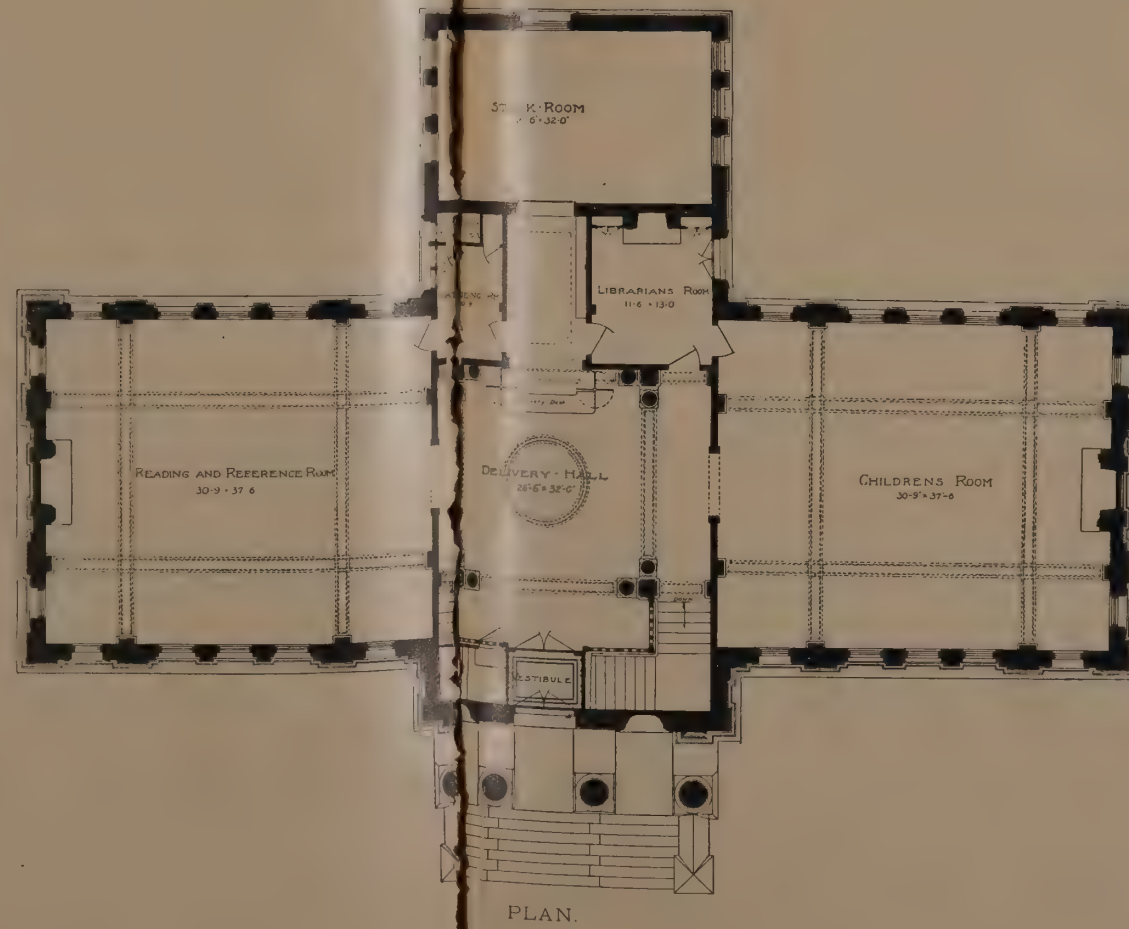
Notes:
Scale the width of
all stone window and
door jambs.
Full size details to have
preference over 1/8" and 1/16"
scale drawings.



JOHN A. FOX, ARCHITECT.



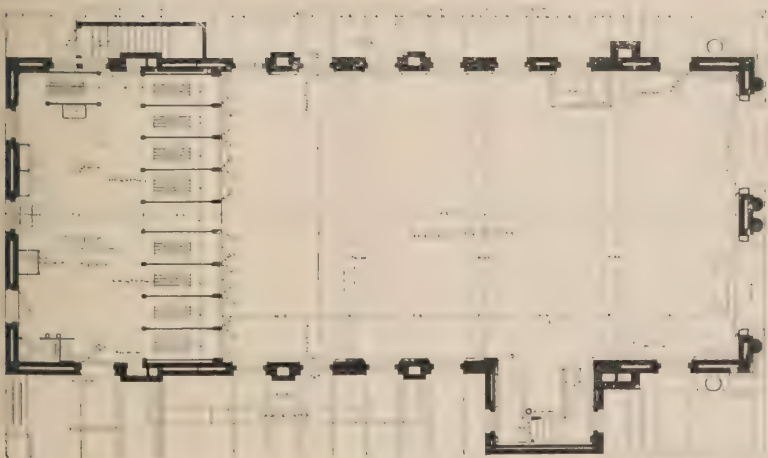
PERSPECTIVE.



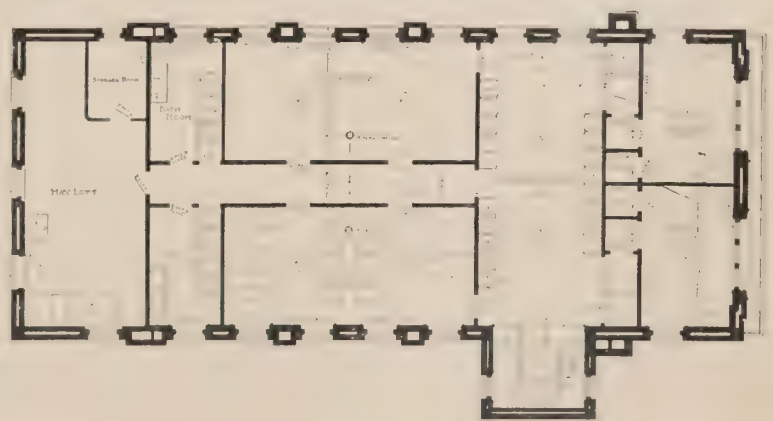
FRONT ELEVATION.
CARNegie LIBRARY, SEDALIA, MISSOURI.
MAUBAN, RUSSELL & GARDEN, ARCHTCTS, ST. LOUIS, MO.



FRONT ELEVATION.



FIRST FLOOR.

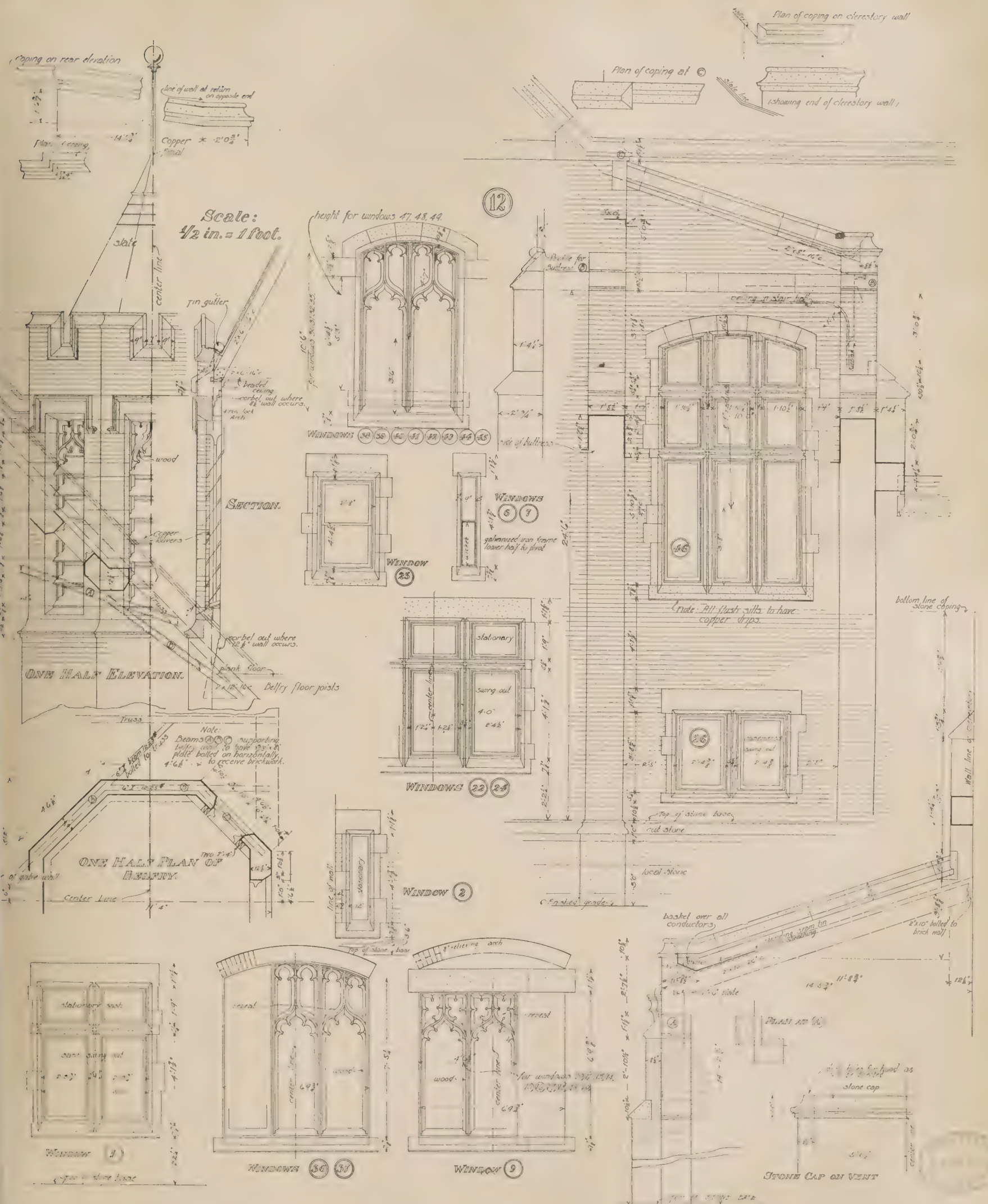


SECOND FLOOR.

FIRE ENGINE HOUSE, BOSTON, MASS.

JOHN A. FOX, ARCHITECT.





DETAILS, SUNDAY-SCHOOL BUILDING, FIRST BAPTIST CHURCH, FRANKLIN, PA.
BEEZER BROTHERS, ARCHITECTS.



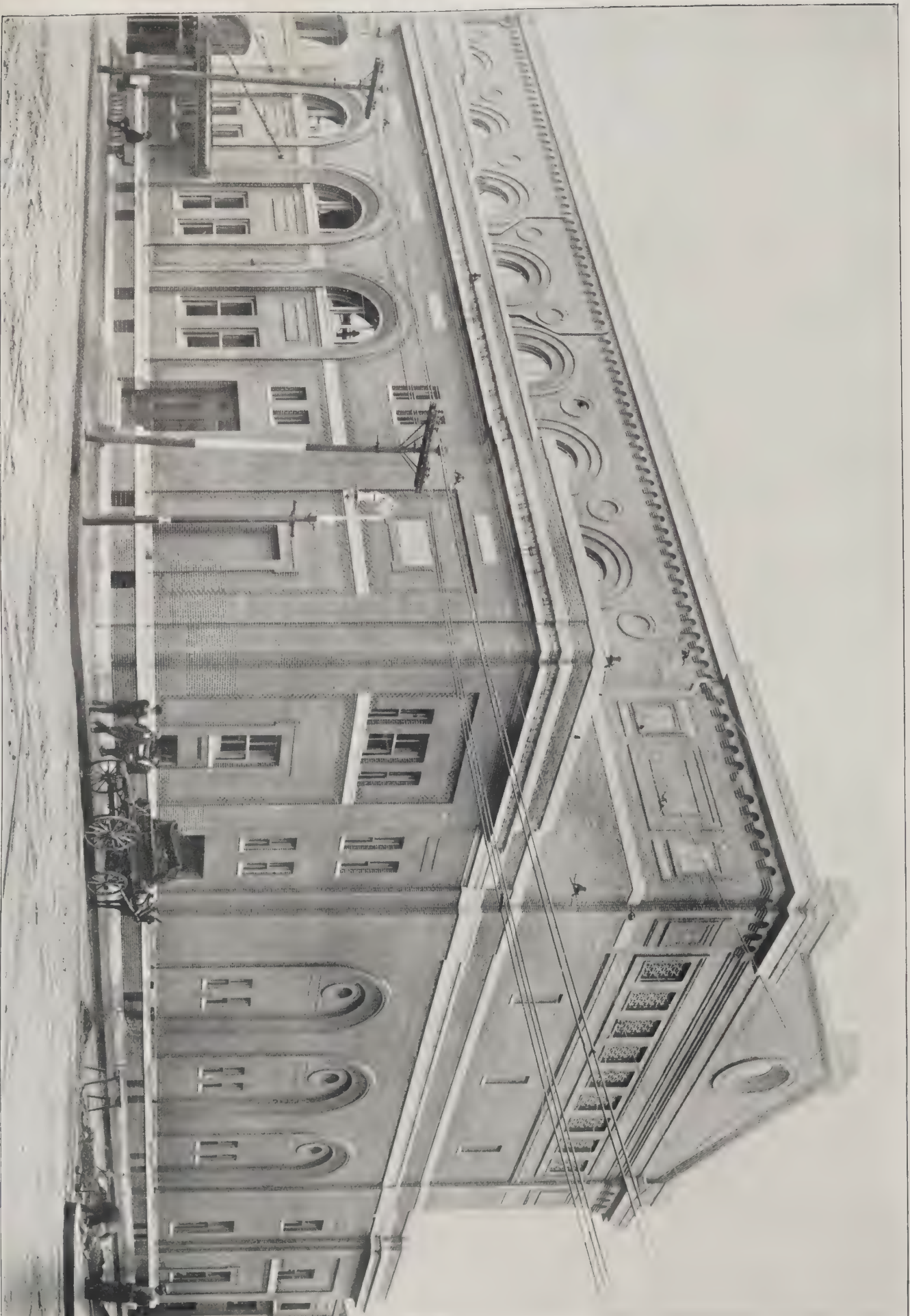
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

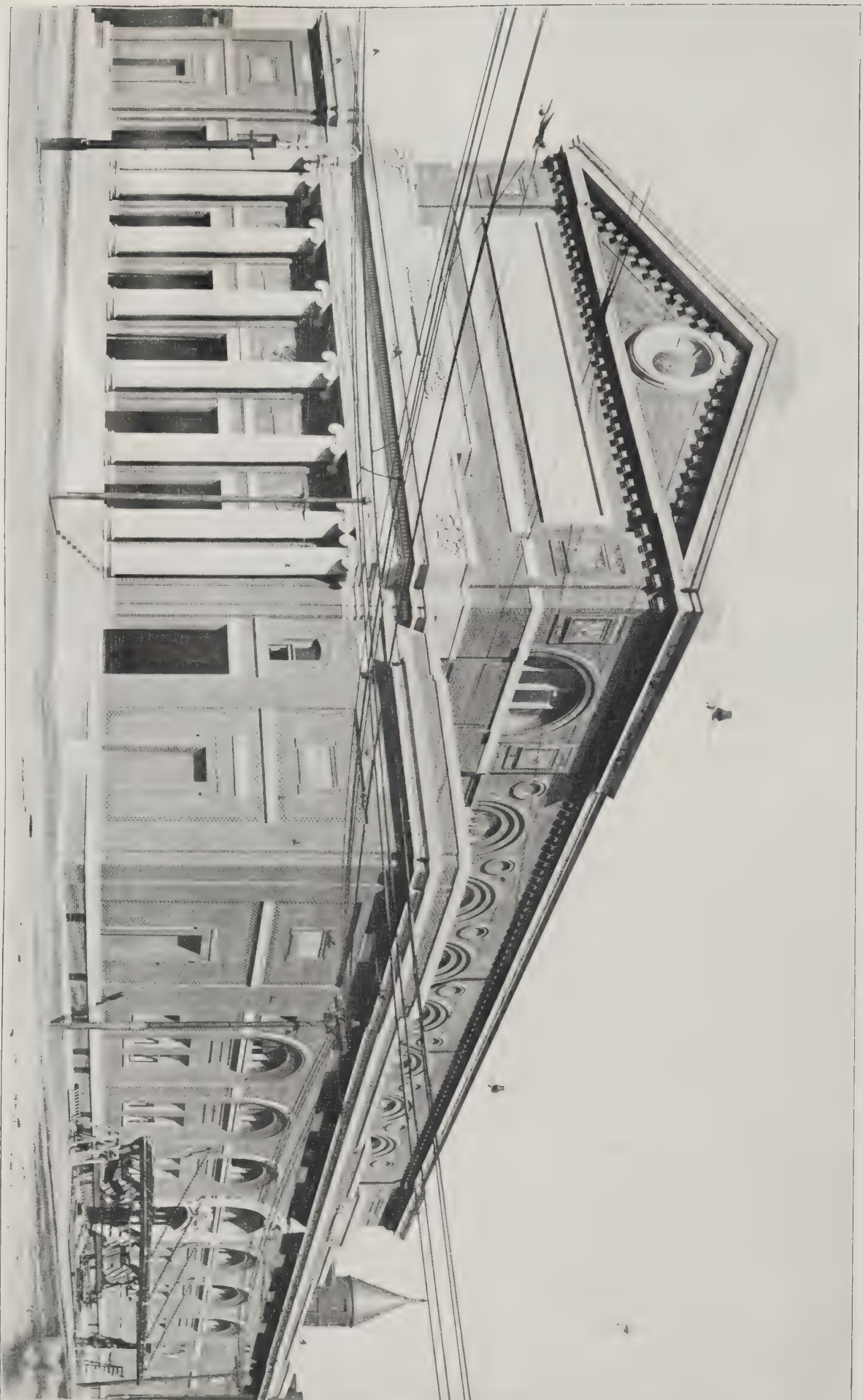
APARTMENT HOUSE. ASHMONT, MASS.

EDWIN J. LEWIS, ARCHITECT.



REAR

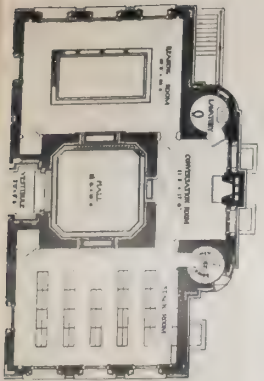
NEW MUSIC HALL, BOSTON, MASS.
MCKIM, MEAD & WHITE, ARCHITECTS.

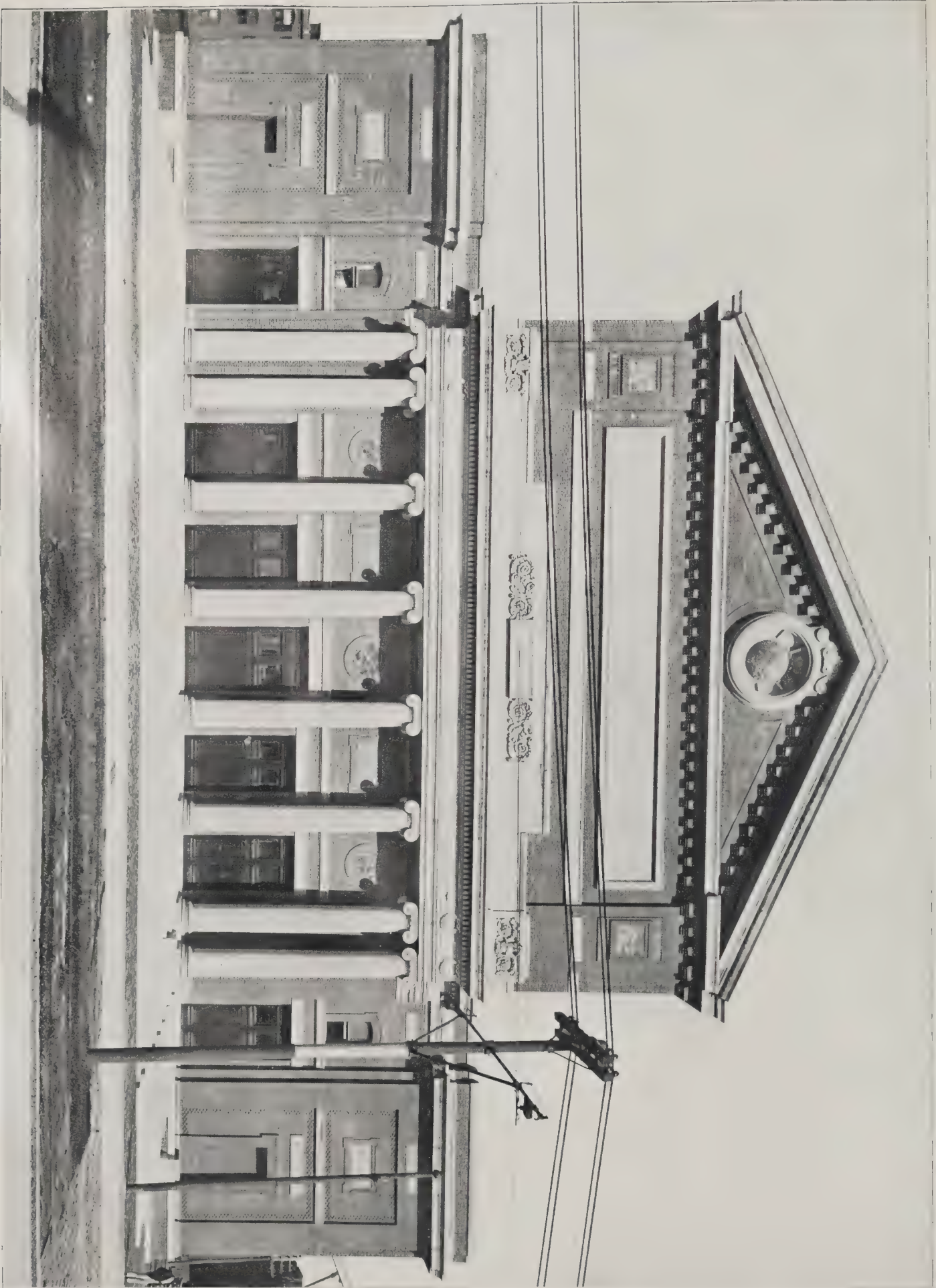


NEW MUSIC HALL, BOSTON, MASS.
MCKIM, MEAD & WHITE, ARCHITECTS.



SCRANTON MEMORIAL LIBRARY, MADISON, CONN.
BRITE & BACON, ARCHITECTS.

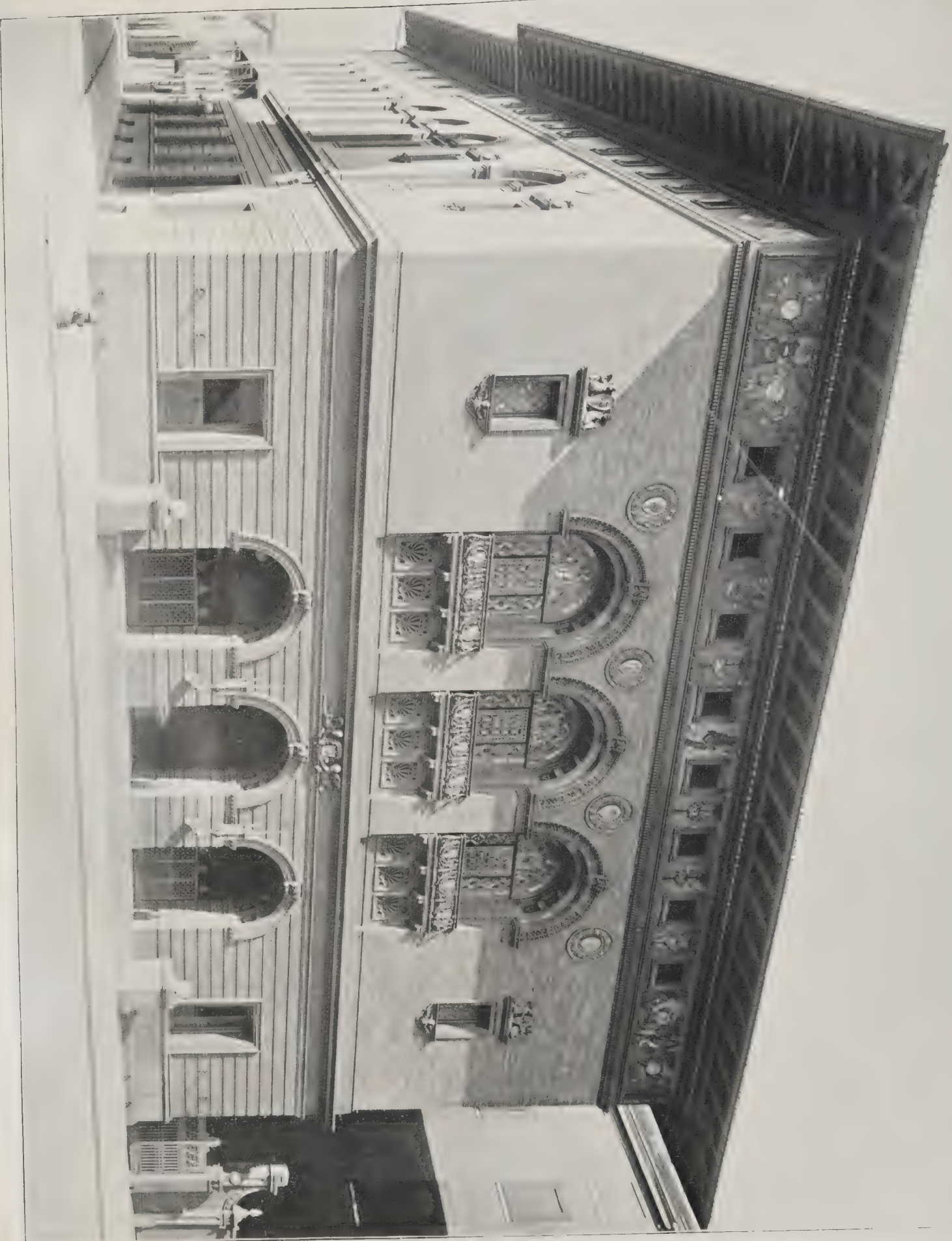




FRONT
NEW MUSIC HALL, BOSTON, MASS.
MCKIM, MEAD & WHITE, ARCHITECTS.



APARTMENT HOUSE, ASHMONT, MASS.
EDWIN J. LEWIS, ARCHITECT.

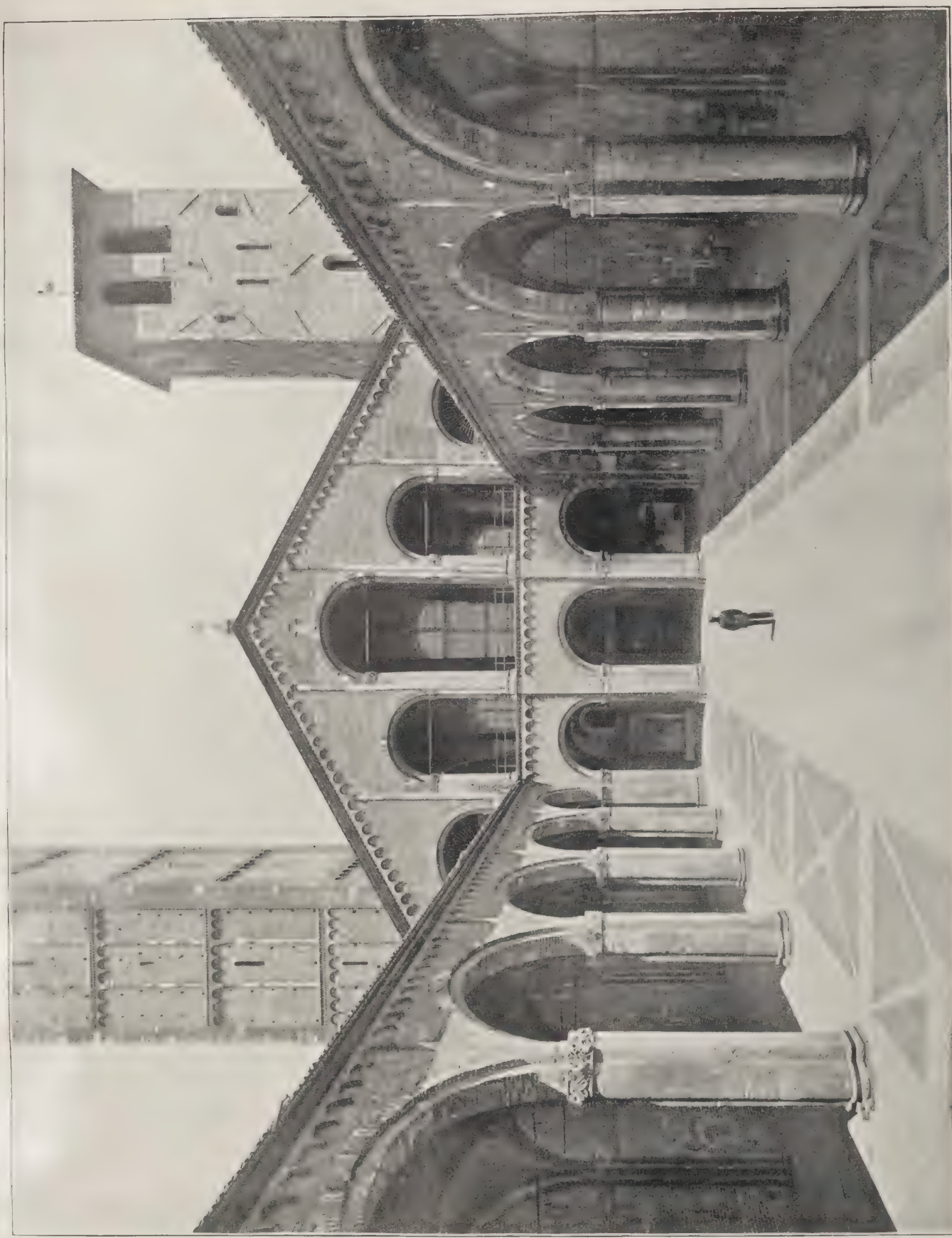


HORTICULTURAL HALL, BROAD STREET, PHILADELPHIA, PA.
FRANK MILES DAY & BRO., ARCHITECTS.

THE BRICKBUILDER,
SEPTEMBER,
1900.

THE BRICKBUILDER,
OCTOBER,
1900.

LIBRARY
OF THE
UNIVERSITY OF
MICHIGAN



THE CHURCH OF SAN AMBROGIO, MILAN, ITALY.



THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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by the American News Company and its branches.

ADVERTISING.

Advertisers are classified and arranged in the following order:—

	PAGE		PAGE
Agencies.—Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

THE old saying in regard to the expensive character of lessons which are acquired by experience certainly does not seem to be applicable to some phases of recent American architecture. On the contrary, our architects have had several opportunities to acquire most valuable lessons by experience which has come easily in a pleasant form and has left a lasting imprint. The Buffalo Exposition is the latest of these experiences and promises to be extremely valuable in its lessons. The buildings which have been projected at Buffalo are similar in character to those which were erected at Chicago, in that they are practically huge plaster of Paris models; and in so far as they are of a temporary nature, they have afforded opportunities for experiments which we would hardly dare attempt in more serious constructions, the Buffalo buildings, however, differing from the Chicago constructions in the lavish use of color. It is too early yet to say whether we, as a nation, will ever use color in a natural, spontaneous manner; but beyond any doubt the Buffalo Exposition buildings will set a pace which we will have to live up to to a very considerable extent, and it is doubtful whether we will ever be again as easily satisfied with pure white plaster as we were in the Court of Honor at Chicago. The Buffalo fair has a riot of rich tones and polychromatic architecture. Considered as sketches, as artistic attempts, the buildings are eminently satisfactory and reflect the greatest credit upon

their designers. We believe this same sentiment will be echoed by the visitors to the fair next spring, and the lavish coloring will remain as a characteristic of this Pan-American Exposition. The throwing off of the restraint which is so hard to avoid in public architecture, the development of the imaginative qualities, the opportunities for breadth and vigor in treatment of details,—make this an object-lesson by which the whole profession, no less than the architects immediately concerned, will be sure to profit. There is, however, just one word of caution which we feel constrained to voice. We have had a good many of these temporary staff structures of late years. So long as they are regarded as sketches, as merely studies, their influence cannot fail of being good; but we must not take them too seriously, nor assume in our permanent work all of the freedom or eclecticism which is so delightful in the temporary buildings. In detail, as well, we can permit ourselves a great license in a building, which, if it is wrong, will not leave a lasting mark on our architecture, and we can enjoy a sketchy, off-hand treatment of details both in mass and in its parts which would not pass muster for permanent work, but the danger would be that not only our younger men who receive strong impressions from this Exposition, but also the elders who will have awakened within them the delight of imaginative architecture, may be tempted to consider too seriously these ephemeral structures. It is our belief that the present acknowledged decadence of modern French architecture is ascribable in no inconsiderable degree to the license which has apparently been considered not only permissible, but desirable, in the designing of the French Exposition buildings. The entrance arch of the present Paris Exposition certainly is the culmination of the tendencies which began way back in 1855. Our Exposition buildings thus far have been worthy representatives of the best efforts of our own architects. The lessons have been learned and are constantly being applied; but we must take all our experience with reserve, and it would be a sorry day for American architecture if all our public buildings were to be designed in the lavish manner which is so fascinating in Exposition structures.

SOMETHING less than two years ago, steel made a rapid and unprecedented jump in price, going far beyond any previous quotations. Whether this rise was due to an unexpected large demand, or was the result of combination among steel manufacturers, we are unable to determine, but we do know it had an immediate effect in checking building operations and postponing for a considerable period the prosperity in structural work which we are all anxious to witness. Within the last six months

steel has returned very nearly to normal quotations. A good illustration of the fluctuation in prices is afforded by the recent acceptance of a bid of \$2,411,000 for the new bridge over the East River in New York. Four months ago the lowest bid for the same work was \$3,321,000. The difference between the two represents a saving of nearly \$1,000,000. In very many cases, owing to the greatly increased proportion of steel which enters into modern buildings, a fluctuation in price, such as is represented by the above figures, would be sufficient to turn a losing investment into one which would pay very fairly on the amount of capital involved. It is to be hoped that it will be many years before this country will witness such extraordinary prices, for so essential a material, as prevailed up to a very few months ago.

"THE BRICKBUILDER" COMPETITION. V.

A VILLAGE BANK TO BE BUILT OF BRICK OR TERRA-COTTA.

PROGRAM.

A BUILDING, to cost in the vicinity of twenty-five or thirty thousand dollars, is to be built facing a village green, around which on opposite sides of the square will be grouped a public library, the village church, the schoolhouse, and the court-house. The building is to be one story in height and is to be used for a small bank. The interior is to contain a main banking room across the front, which is to measure not less than 24 ft. in width by 15 ft. in depth. In the rear will be a small consulting room on one side, about 8 by 12 ft., and a directors' room, 12 by 16 ft., in the center, the two occupying the full width of the banking room, with a small ell to contain the vault, accessible from either the directors' room or the banking room, and a small lavatory. The banking room is to be preceded by a small portico. For the purpose of this competition only the sketch design of the exterior need be considered. The design is to follow substantially the above-described plan, such variations, however, being permissible as are desired to obtain a picturesque treatment. The design is to be of such nature as is suitable for being carried out in burnt-clay products. The height of the story in the main room may be varied, but should not be less than 12 ft. in the clear.

DRAWINGS REQUIRED: A perspective sketch design, made in black ink with no wash work, upon a sheet measuring 15½ ins. wide by 10 ins. high. The drawing is to be signed by a *nom de plume*, or device, and accompanying the same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

Drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before Dec. 1, 1900. For the three designs placed first, THE BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted. Mr. C. H. Blackall, of Boston, has kindly consented to judge and criticize this competition.

THE CHURCH OF SAN AMBROGIO, MILAN, ITALY.

AMONG the round-arched Lombard churches of north Italy none occupies a more prominent place historically than San Ambrogio of Milan. Founded in the fourth century by St. Ambrose, Bishop of Milan, on the ruins of a temple of Bacchus, rebuilt in the ninth century by Bishop Anspertus, aided by the munificence of King Louis the Pious, and again almost entirely rebuilt in the twelfth century with its galleries and atrium, its walls have witnessed the coronation with the "Iron Crown" of many a Lombard king and German emperor. The "Iron Crown" which takes its name from a thin band of iron said to have been forged from one of the nails of the true cross, and enclosed by its hoop of gold, has been kept at Monza since the time of Frederick Barbarossa, but the pillar at which the coronation oath was taken is still preserved under the lime trees in the piazza, and the church is a perfect museum of ecclesiastical antiquities. The high altar, with its silver and enamel decoration of the ninth century, remains intact, together with its beautiful canopy, and the crypt contains the tombs of Saints Ambrose, Protasius, and Gervasius. The church also contains early mosaics and several frescoes. After the massacre of Thessalonica in 389 the gates of this church were said to have been closed by St. Ambrose against the cruel Emperor Theodosius.

The fine atrium which separates the building from the noisy street and gives it the quiet seclusion so necessary for a place of worship seems to have preserved the architectural characteristics of the original building. Constructed of brick, the simple forms of the columns and arcades, and the five great but unequal arches of the façade, relieved against the deep shadows of the loggia, make, with the two guardian towers, a most dignified and solemn, though severe, architectural composition. A simple but strongly corbelled cornice runs around the atrium and up the slopes of the gable, in which no clear-story is expressed. The capitals of the columns are of the curiously carved, blocky style common in Romanesque work.

Altogether the entrance façade of San Ambrogio is an agreeable change from the too much neglected west fronts of many Italian churches. With the architects of north Italy the arcade was the favorite motif of decoration. Used in successive stories as at Pisa, or in single galleries only as at Piacenza, or with columns omitted and arches reduced to the size of successive units of a string-course as in dozens of other Italian churches, it gives a sparkling and brilliant shadow which a flat cornice never attains, and it became the most commonly used exterior decoration in the northern part of the peninsula. Its effect, however, was seldom dignified, and to the northern eye, unaccustomed to the brilliant coloring and sunshine of the south, even appeared at times trivial. This defect is splendidly avoided at San Ambrogio. Nothing can exceed the solemnity and depth of the great arches which overlook the atrium, and the simple and majestic lines of the piers and roof, with their guardian towers, which seem to correspond so well with the grim memories of the German tyrants who assumed the imperial power under their gloomy shades.

The Designing and Planning of Railway Stations. II.

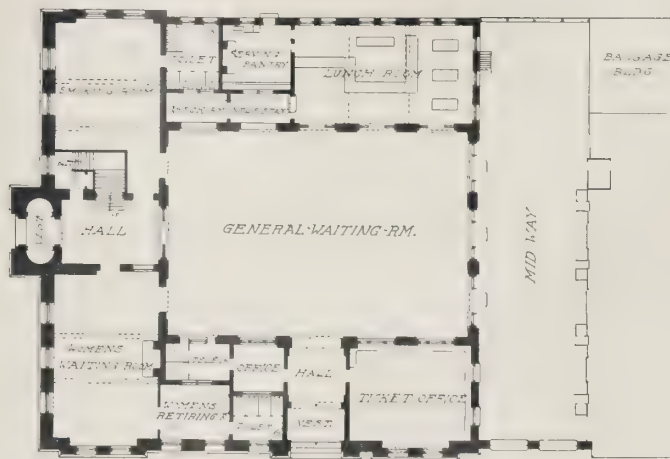
BY ALFRED HOYT GRANGER.

IN a former paper on the planning of railway stations I offered some suggestions as to arrangement, location, and architectural treatment of small suburban and country stations. It is my purpose now to apply the same line of thought to the larger city stations.

There are but three general treatments of plan: the head house, with perhaps a wing flanking the tracks, for baggage, freight, and express; the side house, which is the suburban station on a large scale; and the "island" station, situated between the tracks.

Of the first character is the station at Minneapolis, Minn., for the Chicago, Milwaukee and St. Paul Railway. Though this station is used by but one corporation and is very small in comparison with such terminals as the Reading at Philadelphia, and the new South Terminal at Boston, its plan contains the necessary features for a city station, and from its very smallness is more easily to be studied.

The building stands upon a corner of two principal streets, with ample approaches from each. The main feature is, of course, the general waiting room, which occupies the court of the building. It is two stories in height, and lighted from the ceiling as well as from the end toward the tracks, this end being almost entirely of



PLAN, C. M. & ST. PAUL RAILWAY STATION, MINNEAPOLIS, MINN.

glass. The interior treatment, as shown in the photographs, is entirely of brick and terra-cotta, with a wooden ceiling and marble floor. Up to the spring course of the arches the walls are wainscoted with a cream white, dull enamel brick. The terra-cotta trimmings and the walls above this inner court are of a golden tone in color, which gives a luminous effect to the interior. Around this inner court are arranged the women's waiting room, women's retiring room, lavatories, check, parcel, and telegraph and smoking rooms, with the ticket office and lunch room placed nearest the train shed, where they are most accessible to the traveling public.

Between the station proper and the tracks and baggage rooms is a large covered esplanade or "midway," directly accessible to the street. This feature, which is now of almost universal use, prevents confusion in the handling of large crowds. For convenience at times of excessive travel, extra ticket windows should be arranged opening directly upon this "midway."

The baggage and express rooms are always preferably located in a separate building, which must be accessible to the "midway," and in every case should contain, besides necessary baggage and express rooms, a small room for employees and ample lavatories for same.

Although from an architectural standpoint one fine large arch separating the station building from the train shed at the street ends of the "midway" is desirable, it was thought best in this case to use two arches, so as to divide the crowd, the outgoing passengers to pass the extra ticket windows through the opening nearer the station, without conflicting with incoming passengers, who reach the street directly through the archway nearer the train shed.



C. M. & ST. PAUL RAILWAY STATION, MINNEAPOLIS, MINN.
Frost & Granger, Architects.



MAIN WAITING ROOM, C. M. & ST. PAUL RAILWAY STATION,
MINNEAPOLIS, MINN.

Every city station should be placed far enough back from the street to allow space for cabs and other vehicles without interfering with regular traffic. If this is not possible, a covered court should be arranged for all cabs and carriages, as has been very happily done in the Baltimore and Ohio station in Chicago.

Each entrance to a city station should be provided with a covered shelter over the sidewalk to protect people entering or leaving carriages. Often an interesting feature can be made of this canopy by treating it as a French marquee, and hanging it from the building by ornamental wrought-iron chains.

The upper stories of the Minneapolis station are devoted to offices and emigrant accommodations. The waiting rooms for emigrants are directly accessible to the "midway" by exterior stairways.

The exterior treatment of this station is broad and simple. From the fact of its being an office building as well as railway station, it was deemed necessary to design a clock tower to give the building more character as a station, a feature which we do not always recommend.

The first story is treated very simply in granite, with large, square openings and no ornamentation beyond a molded water-table and string-course, with some bold moldings around the entrance archways, which, being of equal importance, are treated alike. Above the bold string-course crowning the first story the materials are



C. M. & ST. PAUL RAILWAY STATION, MINNEAPOLIS, MINN.

pressed brick and terra-cotta, similar in tone and of a golden brown; the roof and upper portion of the tower being of copper.

A far different problem is that of the Union Pacific station at Omaha. Here the tracks are in the valley between two hills, connected by a broad viaduct 25 ft. above the track level.

All the roads from the East using this station terminate at Omaha; and for the convenience of passengers changing from the Eastern to Western bound trains, or *vice versa*, it was deemed best to locate all waiting rooms, etc., at the lower level, leaving only a large vestibule and check room, with stairway and elevators, at the viaduct level. This great vestibule is treated as an entrance archway, built of pressed brick, deep yellow in tone, with Bedford stone trimmings. The pediment is eventually to be richly carved, and to be surmounted with a bronze eagle standing upon a globe.

The whole of the station proper is upon the track



FIREPLACE, LADIES' WAITING ROOM, C. M. & ST. PAUL RAILWAY STATION, MINNEAPOLIS, MINN.

level, and is directly accessible to the streets at this level, and also from the viaduct by an inclined roadway built by the railroad company.

This station belongs to the side-house class, and the "midway" extends the entire length of the main building and far enough beyond to admit passengers to restaurant and baggage room.

The location of the lunch room, as shown on the plan, is in this case unique, and not in our judgment desirable. It was adopted for the convenience of a very large percentage of the traveling public, who have no occasion to enter the station proper.

The general arrangement of floor plan is exceedingly simple, and explains itself. The materials used in the main waiting room are marble, brick, and terra-cotta, with a wood and plaster ceiling.

The wainscoting, up to the spring of the arches, is Vermont green marble; the brick and terra-cotta, fawn-color; and all woodwork, birch stained a rich mahogany color. The floors are of marble slabs. It is the ultimate intention to fill the empty panels of the arches with mural paintings, illustrating features of Western Indian life. The treatment of the grand vestibule at the viaduct level is similar to that of the main waiting room (excepting its ceiling, which is a barrel vault concentric with entrance arch), and is, like it, to be ultimately decorated.

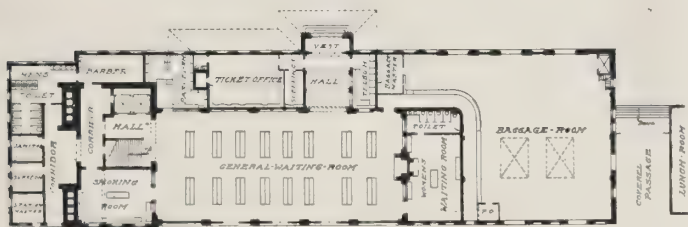
Throughout, an effort has been made to plan and build a railway station, and nothing else. The peculiar situation of this station decided the railroad companies to use umbrella sheds connected by a broad causeway, instead of one large covered shed. For many reasons this form of shed is preferable, as it is simple to care for and much more open and cleanly.

The "island" form of station is unusual in a city terminal, though it is to be used in the new stations at Pittsburgh and Nashville. All through trains pass on either side of the station; while trains starting or ending at the point where station is located use stub tracks in a train shed at one end of the building.

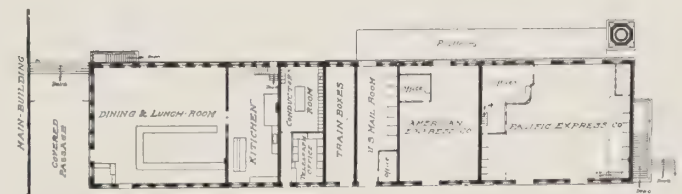


UNION STATION, OMAHA, NEB.
Frost & Granger, Architects.

ling of large crowds of people and large quantities of baggage, and in design to adhere to simple dignity of



PLAN, UNION STATION, OMAHA, NEB.



In designing any kind of a railway station, large or small, the essential point in plan is to facilitate the hand-

proportion with but little ornamentation, and, above all, to make the building express its purpose.



UNION STATION, OMAHA, NEB.



UNION STATION, OMAHA, NEB.



UNION STATION, OMAHA, NEB.

A USE FOR BAD COLOR BRICKS.

WE are accustomed to see old houses, with otherwise plain brick walls, relieved at conspicuous places by brick patterns. A favorite pattern is the diamond, or a semi-circular arch in imitation of an opening. In fact, our forefathers disliked anything approaching a broad and absolutely plain surface. These designs in brick are very rarely seen in modern buildings, and one of the reasons for this, no doubt, is that brick walls generally have more openings than those of yore. But we saw something like a revival of this in a house wall the other day; only, the architect, instead of selecting bricks of definite tint to make the relief work conspicuous, preferred to make his designs in parti-colored bricks that had in fact been imperfectly fired. The result, even from an artistic standpoint, was not bad, and we shall doubtless see more of this species of decoration. This departure ought to suit brickmakers very well, for they would be enabled to dispose of bricks of bad color, though perfectly sound, at a fair price. Our brick walls are too plain, and we welcome this revival of an almost lost art."—*British Clayworker*.



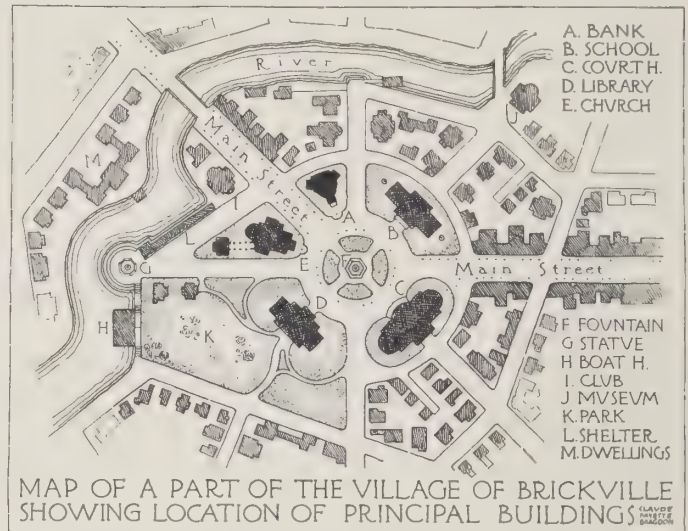
MAIN WAITING ROOM, UNION STATION, OMAHA, NEB.

The "Village Bank" Series.¹ I.

BY CLAUDE FAYETTE BRAGDON.

A letter from Michelangelo Jones, junior member of the architectural firm of Renn and Jones, to his partner, Vitruvius Renn, who is traveling in Italy.

"... I am happy to inform you that our plans for the Citizens' Bank, of Brickville, have been accepted. I have just returned from that charming village and my first interview with the directors. You will remember my ancient interest in the place, dating from the time when, by the terms of old Ploughman's will, it became a co-operative, profit-sharing community. The business which he founded has increased enormously since his death, and Brickville is now, I am told, the largest manufactory of horseless agricultural machinery in the world. The village lies in the midst of a vast and fertile plain, from which, on clear days, the mountains are visible, each peak flying a white flag of snow. The whole country is not unlike a newer, broader Lombardy, virgin and unhistoryed. Strangely, or perhaps naturally, enough, Brickville reminds one of some Lombard city let loose from its confining girdle of walls. All the houses are built of an exquisite salmon-colored brick, native to the place, the streets are bowers of green, and the gardens

¹ PROGRAM.

The problem is to be treated primarily from a picturesque standpoint. The building is assumed to cost in the vicinity of twenty-five to thirty thousand dollars, and be only one story in height, the interior arranged for a main banking room, a small consulting room, a directors' room about 12 by 14 ft., a vault measuring outside of the brick walls 8 by 10 ft., and any other interior arrangements which may seem suitable. The main entrance is to be preceded by a small vestibule, and the building itself should be set back not less than 10 ft. from the street line and be isolated on all sides. The site is supposed to be a level one, and the bank will be in close proximity to the public library, the village church, the schoolhouse, and the court-house, which together will form the center of a town of a few thousand inhabitants. The design is to be of such nature as is suitable for being carried out in burnt-clay products.

and parks are gay with flowers; while overhead the sky is only less blue than the gorgeous ultramarine of an Italian summer.

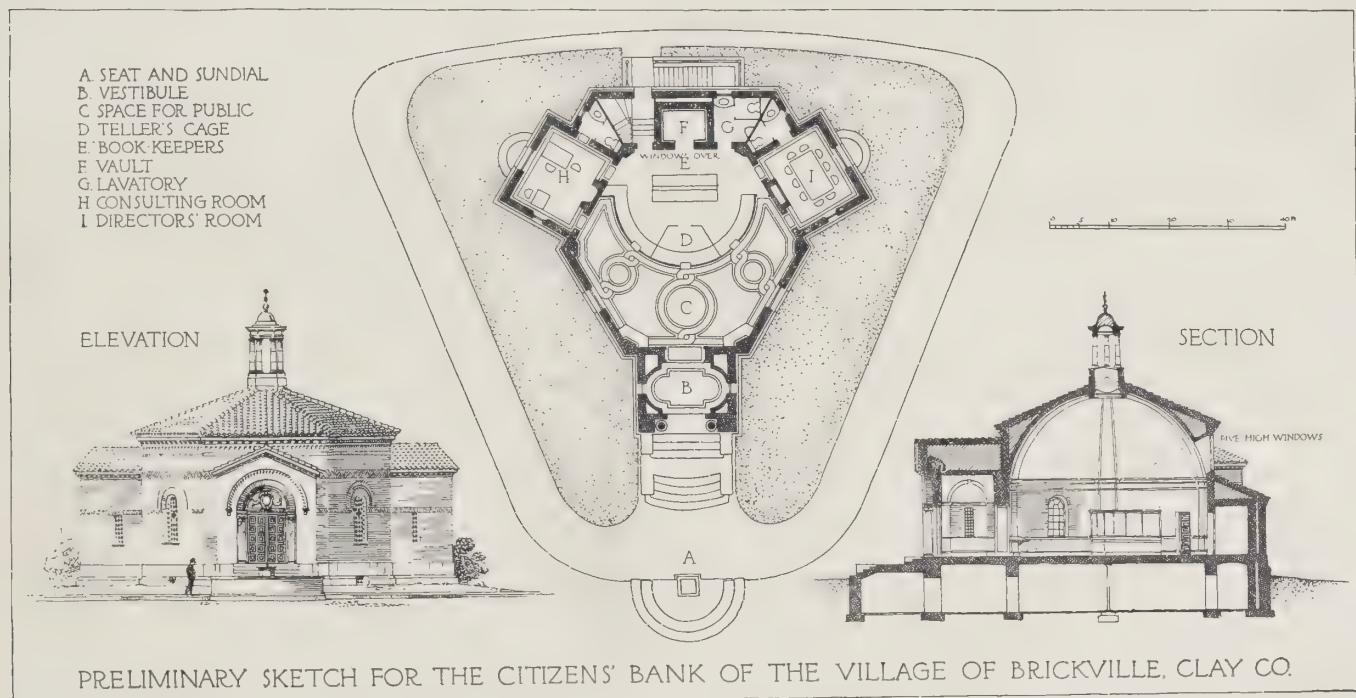
"The village has been laid out with considerable skill and forethought, the principal buildings—that is to say, the court-house, library, school, and church—being grouped about a public square in the center of which stands a fine memorial fountain by Rodens. I was delighted to find that the bank site also fronts this square, being a little triangle at the intersection of three streets. I send you a tracing of part of the village map, which shows the whole thing clearly, together with a print of the sketch I submitted to the directors. The plan which seemed to fit the site best, and to fulfil the simple conditions of the problem, worked out in the most natural way into something so resembling some of the little brick buildings one sees in Tuscany and Lombardy that the style chose itself. I mean to pay great atten-

you have commissioned us to prepare plans. It is, therefore, only necessary here to touch upon such matters as are commonly embodied in an architect's specification, since they are not susceptible of a graphical presentation.

"MATERIALS: The building is to be constructed so far as possible of incombustible materials, your excellent local brick and terra-cotta for the exterior walls, Spanish tiles for the roof, steel for the floor beams, and for the interior finish American Verde antique marble, glazed tile or faience, and plaster.

"The counters, furniture, and other woodwork will be of mahogany, finished dark, and the screen which separates the public from the working part of the bank will be of bronze above a wainscoting of marble. The wicket openings in this screen are to be provided with plate-glass shelves, supported on bronze brackets.

"LIGHTING: The building is to be abundantly supplied with natural light in every part, the main banking room



tion to what Mrs. Van Rensselaer calls 'structural finish' on the exterior. I propose using a twelve-inch brick laid up in Flemish bond with dark headers, and a broad gray joint, something like that used in the fine new Museum of Science and Art by Philadelphia's aggregated architects. What little detail there may be—in the cornice and entrance, principally—I'll study from early Italian models. That treatment of brick and terra-cotta it seems to me impossible to excel. Luckily, our library contains Strack's excellent work on the subject. If you go to Bologna, please make it a point to see if Emilia has any photographs that you think would help me."

From Messrs. Jones and Renn to the Directors of the Citizens' Bank of Brickville.

"GENTLEMEN: The preliminary drawings which we submit herewith indicate with sufficient clearness the size, style, and arrangement of the bank building for which

being lighted by five high windows opposite the entrance, two windows in the public space, and a skylight in the apex of the dome. This latter is to be glazed with stained and leaded glass, which may be illuminated by a cluster of electric lights above and behind it. Side brackets conveniently placed in all the rooms, a row of single lights along the top of the bronze screen, and desk lights, with swivel arms and green shades, will insure ample artificial illumination.

"HEATING AND VENTILATING: The building will be heated by means of hot water. All radiation will be indirect; that is, pure air heated to a proper temperature in the basement will be introduced into the various rooms through wall and floor registers.

"All rooms will be ventilated into flues connecting with the main ventilator at the highest part of the dome.

"PLUMBING: All plumbing appliances will be of the very latest and best pattern. The white earthenware fixtures will be set in and upon counter-sunk marble

slabs, all exposed piping will be nickel-plated, and all woodwork of mahogany, attached to the marble and earthenware with nickel-plated trimmings.

"DECORATING: The prevailing colors of the main banking room will be dark green and white, the color of the marble wainscoting; pale green and white, the color of the tile floor and of the faience above the wainscoting; bronze, the color of the screen; red brown, the color of the furniture; and pale yellow ochre, the color of the dome, though it is hoped that the appropriation for this part of the work may be sufficient to employ a mural painter of reputation to carry out some more ambitious scheme of decoration for the dome consistent with the nature and style of the building.

EST: Two estimates of cost have been made, one by Messrs. Rough & Ready, contractors of Millamours, amounting to \$23,800; and another by us, amounting to \$25,951. It is our opinion that the expense, exclusive of decorating and furnishing, can without difficulty be confined to \$25,000."

A letter from Mr. Jones to his friend, Vivette Redforth.

"MY DEAR VIVETTE: You alone of all my friends have seemed interested in what the others call my fantastic and mystical ideas concerning the art I practise. Perhaps this is because, occupied as you are in weaving romance into workaday lives, you are surprised to discover in me one to whom his daily task is itself as exciting and absorbing as a romance; but I fancy that with your wide sympathies and keen intelligence you are interested in the thing for its own sake, as I am.

"My practical-minded partner contends (with excellent reason) that the object of a work of architecture is to fulfil certain definite conditions in an economical and admirable way, and in fulfilling, to express these conditions. The truth of this contention I am surely the last to deny, but further than this I claim that the architect, who is

also an artist, will, in working out his problem, instinctively and inevitably obey certain laws of beauty which reveal themselves to him as he progresses, with the result that his work becomes surcharged with a thousand mysterious meanings of which the beholder may be unconscious, but which excite, charm, and attract him like the thought of buried treasure. A work of architecture, it seems to me, becomes a work of art solely by reason of some such excess of beauty.

"However, I did not start to deliver a lecture, but to tell you about a little bank

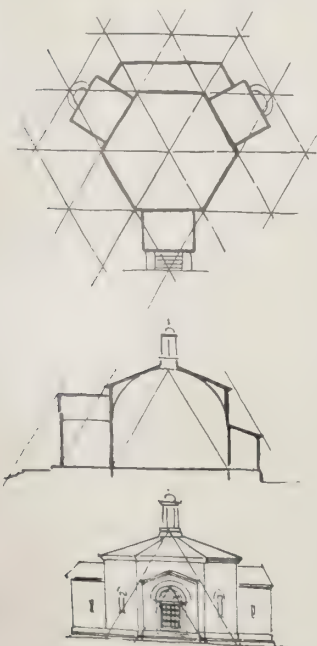


building I have been designing, which interests me hugely because it affords a better chance than usual to follow out some of my pet theories. I have just written a letter to Mr. Renn telling him all I thought he would like to know of the village, the site of the building, and the general arrangement and style I followed; another letter to the directors regarding the cost, the convenience, and a dozen other stupid and necessary things, and now to you I offer the kernel of the whole matter, the one thing that made it so worth while to me, — 'The cherry in the cocktail.' (You know the story; indeed, I think you told it to me.)

"The site happens to be a triangle, and as the building is to occupy nearly the whole of it, that must approximate a triangle too. The most perfect of all triangles is, of course, the equilateral. A building of exactly that shape might be very distressing; but it is conceivable that a building founded not too obviously upon the equilateral triangle, its every proportion being determined by it, might partake of some of the perfections of the generating figure. To have the triangle everywhere present, yet nowhere too apparent, like the flavor of onion in a salad, — that was the idea with which I set to work.

"Architecture, you know, is related to space in the same way that music is related to time, that is to say, one of its functions is to divide and subdivide space rhythmically and harmoniously. Failing in that, it is only a three dimensional noise. The plan, section, and elevation of my building, then, must all make music to the eye. So, like the equal and regular beats into which music is divided, I first marked off my paper into a number of equal equilateral triangles. 'As is the great, so is the small' (says I to myself, says I), and if the whole building is to conform to an equilateral triangle, every part of it must do the same. It's like the vertebrate, which is nothing but a system of little spines; the tree which repeats itself in every leaf. On this pattern of triangles I traced the plan of my building, as you see it in the sketch. The interior proportions of the dome I established by means of a single equilateral triangle. (The dome of the Pantheon happens to be of this proportion too.) The same principle applied to the elevation yielded equally satisfactory results.

All this may seem to you too much like reducing art to a formula. It isn't as easy as it looks, and the last appeal is always to the eye, and not to geometry, just as in music the last appeal is to the ear. "I've told you only a part, but this letter is already too long. I hope I haven't bored you with all this; I had to talk it to somebody, and, as so often before, turned naturally to you."



Church Architecture in Materials of Clay.

ARCHITECTURAL readers and others in search of authentic data on this subject cannot do better than refer to *THE BRICKBUILDER*, vol. 5, pages 88, 89, and 90, in which St. John's R. C. Church, Johnstown, Pa., is illustrated from scale details and photographs of the completed work. We have not yet seen the actual building, but judging from these illustrations and other particulars obtained from the architects, it would more than repay the cost of personal inspection. Such a bold and, we believe, successful venture could not fail to interest, in a special degree, those who contemplate a similar extensive use of clay products in conjunction with structural steel. That which a few years ago would have been decried as a far-fetched theory in church architecture has been submitted to, and has withstood, the test of professional criticism. Original ideas are not always workable, but here is one that must now be accepted as a palpable, permanent reality in advanced practice, opening up a vista of unexplored possibilities. In this, the concluding paper of a series, we have space for but one additional illustration. It, however, will serve to show the exact relationship existing between a really effective belfry and the main tower, which, with its sculptured frieze of life-size figures, remains the most commanding feature in the composition.

The building throughout is of brick and terra-cotta: the former a fire-flashed buff; the latter made to match as nearly as possible the prevailing tint. There is therefore nothing surprising in the statement that, after a test of four years, a building constructed of such materials remains proof against the effects of a smoke-laden atmosphere, even in a region so intimately associated with coal and iron.

One other example selected from a great number must now suffice. For this we turn to the West End Presbyterian Church, 105th Street and Amsterdam Avenue, New York, designed by Mr. H. F. Kilburn. Here we have a good type of what may be described, in general terms, as a modernized Romanesque exterior, on which there is nothing to be seen save brick and terra-cotta from water-table to the cross on apex of tower. With the interior we are not particularly concerned at present, except to remark that the plan admits of an uninterrupted auditorium, suitable to a service in which the sermon has always been considered an essential feature. The style approaches Romanesque, perhaps, more closely than it does Renaissance,

though the tall campanile and round arches are common to both. In detail, too, we find these styles about equally represented; also the classical fret and honeysuckle, the Norman zigzag, the spiral angles found in early French Renaissance, and the lozenged shafts of Venetian Gothic.

It will not, we hope, be supposed from this that the architect has resorted in any degree to what journalists are wont to call "paste and scissors" practice. This building is not in any sense a copy of something that exists elsewhere, nor has it been garbled piece-meal from contemporary work. With a copious architectural vo-

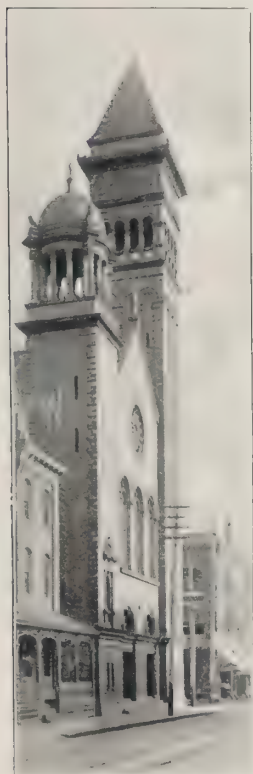


FIG. 24. ST. JOHN'S CHURCH, JOHNSTOWN, PA.
Beezer Bros., Architects.



FIG. 25. WEST END PRESBYTERIAN CHURCH, AMSTERDAM AVENUE AND 105TH STREET, NEW YORK CITY.
H. F. Kilburn, Architect.

cabulary, so to speak, from which all have been free to help themselves, he has formulated new thoughts, conveyed new ideas, and this, too, in a style of phraseology at once apt and idiomatic. All that has been, or ever can be, written in our language resolves itself into an alphabet of twenty-six letters. The letters in themselves are common property, but marshal them into words, sentences, paragraphs, etc., and we have a composition more or less original, appropriate, and expressive. The man who does this, and does it well, gives to his work a certain character and individuality, with which his name may become lastingly associated. Mr. Kilburn has not attempted to invent a new alphabet of architectural forms. He has contented himself with a selection of

such as best suited his purpose from among those "of different tongues and nations," all of which have done duty for ages. These he has transmuted through the medium of a trained intelligence, composing the units into members, the members into groups, and the whole into a well-ordered assemblage. Indeed, the several components are so placed that a latent affinity seems to spring up where, in less skilful hands, incongruity might have been expected. Whether viewed as a whole, or as to the relationship of its parts, there is hardly a discordant note in what is virtually an original composition.

This example is more ornate and a trifle less masculine than the one with which Mr. Waterhouse has furnished us; but while the plasticity of the material is accentuated in the free use of ornament, it cannot be said that anything has been overdone. That elaborate arched entrance and the fine triple windows have a setting of plain wall surface that preserves an equilibrium, imparting to the building an air of homogeneity and repose. Moreover, the richness and variety of these features are obtained at much less cost than might be supposed from a cursory view of the work when set, a circumstance that seems to call for some explanation. This is due chiefly to the fact that the design lends itself to an arrangement of jointing that produces the greatest possible repetition of shapes obtainable from a given number of molds. In other words, the number of shapes is small when compared with the number of blocks, — a safe test in fixing the relative cost of manufacture. The average size of the blocks is much less than could have been desired, but this drawback is offset to some extent by the greater convenience and immunity from risk in handling. This is true of the pilasters, capitals, voussoirs, etc., of which the several entrances are made up, and especially so of the modillion cornice immediately above. The two triple windows and the two rose windows in the gables, the coping on said gables and the four pinnacles at the intersections, resolve themselves into simple units, most of which can be repeated many times without appearing monotonous. The band-courses that alternate with brick have the same surface treatment throughout, chaste and unobtrusive in design, but none the less effective on that account. The dormers and corbelled balustrade below are alike on all sides of tower; while a single miter and one or two running pieces built up in successive courses constitute the pointed roof. The cross forming apex is the only block

on the building that has not been duplicated, a distinction to which it is surely entitled.

The first impression that one gets on approaching this church is a mellow harmony of color, in which a tawny buff predominates. The terra-cotta is of a slightly lighter tint, and no attempt has been made to imitate the subtle variations in the brick, which, as will be seen presently, is due to different conditions of manufacture. Neither tame nor obtrusive, the terra-cotta stands on its merits, not offering to decry, or with any desire to disown humbler members of the same family, but with just enough contrast to form a convenient and effective line of demarcation. The last and most enduring impression produced by an examination of this building is: The degree of elaboration and seeming variety of detail that can be obtained by a surprisingly small number of individual units. Herein lies the great secret for which architects invariably seek, and often fail to find a key: How to reconcile the artistic and commercial exigencies that arise in using so many cubic feet of terra-cotta.

The growing popularity of speckled brick, in shades varying from yellow buff to dark brown, is seen in the extent to which they have been used in recent church building. A demand has now arisen for speckled terra-cotta that will match such shade of brick as may happen to be selected. Some architects take it for granted that anything procurable in brick can be duplicated in blocks of a larger size, seeing that both are of burnt clay. This assumption is far too sweeping, for though to some extent true, it is subject to important limitations. To meet this demand, some manufacturers have gone the length of using the same clay mixture, and burning both classes of goods in the same kind of kiln, hoping thereby to insure with greater certainty the results sought after. Theoretically this line of procedure would appear eminently feasible, but the

practical difficulties encountered are not always easily overcome.

In the first place, a piece of clay forced into shape under pressure in a steel mold will not be a perfect match for another piece pressed in a plaster mold and finished by hand. The surface texture, after burning, will differ in each case, and so also will the color. This, however, as compared with other drawbacks to which we are about to refer, is really a minor consideration. In attempting to burn terra-cotta under the same conditions as invariably prevail in the production of Pompeian brick all expectation of uniformity in color must be abandoned.

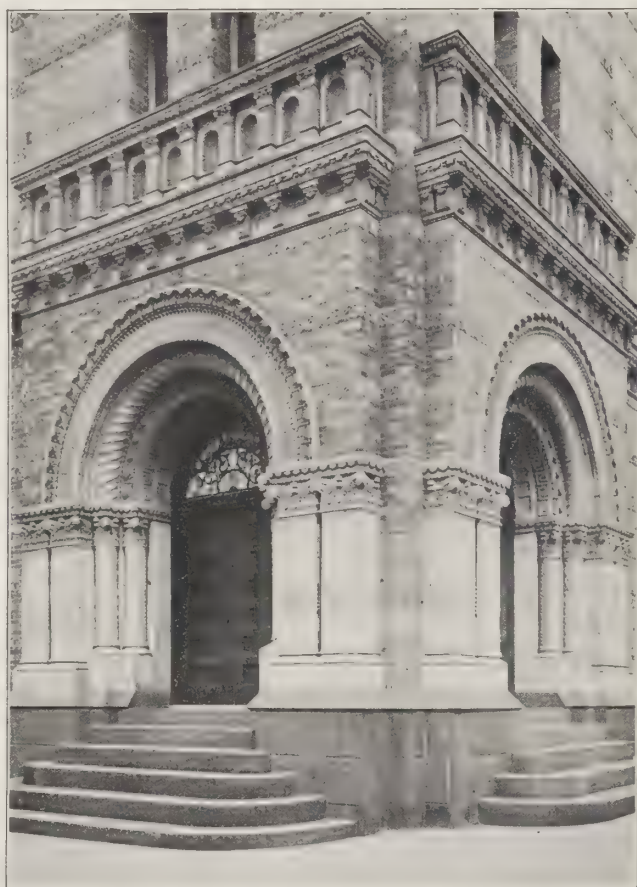


FIG. 26. ENTRANCE, WEST END PRESBYTERIAN CHURCH.

In an open fire, as distinguished from a muffled kiln, tongues of flame impinge in a haphazard way on the goods. In clay that contains varying percentages of iron, this intense heat produces corresponding degrees of oxidation. The surface likewise becomes disturbed by a pimply excrescence, or it may be slightly pitted by the exudation of iron that has melted and disappeared. Similar manifestations will appear in blocks of terra-

cotta, but in such irregular and erratic fashion as to destroy all hope of reasonable uniformity.

There are many supplementary agencies, more or less capricious in their action, that are difficult, if not impossible, to control. Among these we have the quality as well as the degree of heat, the character of the gases that generate in the kiln, depending on the amount of air allowed to enter during the several stages of burning, also during the process of cooling. Some of these are fairly well understood, therefore under control; some are matters of conjecture on which authorities differ; while some are, as yet, beyond the ken of acknowledged experts. On one thing they do agree, however, and that is, the



FIG. 27. TRIPLE WINDOWS,
WEST END PRESBYTE-
RIAN CHURCH.

glorious uncertainty of burning terra-cotta in an open fire. Of course, in the case of brick, this necessity has of late been accepted as a positive virtue; for it is the variation so caused that has created the demand, and given them such widespread popularity. Not so with relatively large blocks of terra-cotta, the several positions of which have been pre-determined, and which cannot be classified at will, or shifted into new combinations. When set in position, the light and dark blocks alternating in such way as to render the difference still more conspicuous, we get an unpleasant reminder of terra-cotta making as it existed among us some ten or fifteen years ago. The fact is, that this variation of color, which gives added charm to the small units, becomes an eyesore in terra-cotta, wherein the blocks are necessarily large and rarely interchangeable.

The same objections that have been urged against open firing on the score of color hold good in the equally important matter of fit and accuracy of dimension. The surfaces cannot be held true, the members will not take up with each other at the joints, and the shrinkage scale amounts to a mere approximation on which no positive reliance can be placed. Something, no doubt, depends on the point of view from which these shortcomings are seen by architects. One man will insist on perfectly

even color, close joints, good lines, and much mechanical exactitude; another will aim at an antique, rugged picturesqueness. In the latter case some of the defects just enumerated would instantly disappear, while others would take on a new attractiveness. We have seen work of the kind referred to used on factory and storage buildings with excellent effect. On recently erected power-houses, etc., it gives an impression of strength, durability, and titanic force in admirable keeping with the character of such buildings. These, however, are exceptions to the general rule, and must be judged by a far different standard from that which prevails in the class of work which we have had under consideration.

When an architect calls for terra-cotta to match his brick, — a not unusual nor yet unreasonable requirement, — the manufacturers are still at liberty, we presume, to adopt the best-known method by which the desired result may be attained. We are not betraying any trade secret in saying that there *are* ways in which any shade of Pompeian brick can be duplicated in terra-cotta, and still preserve a degree of uniformity equal to that of stone. It *has* been done frequently of late in the regular course of business, with complete success; and we all know that what man has done man can do, if he exerts himself. Architects do not concern themselves so much

with the process as they do with the product. We have not heard of a case in which any one method of manufacture was specified, all others being prohibited. For example, in order to reduce the particles of crude iron contained in the clay from which this variety of brick is made, a flame of great intensity must come directly into contact with each brick. In a muffled kiln, such as is used for burning perhaps 90 per cent. of all the terra-cotta made, no direct flame is permitted to enter; hence, these particles of iron remain inert, their presence having no appreciable effect on the goods. At this point, however, practical science steps in to assist nature, by a further legitimate use of her own bountiful resources. By adding to the clay varying percentages of granulated manganese that will fuse at a relatively low temperature, we get corresponding shades of Pompeian terra-cotta, each of them pre-determined and under control. Work so produced will possess a degree of uniformity in color, trueness of line, and mechanical fitness that would be quite impossible of attainment by a haphazard system of burning, under which the all-important human factor is, for the time being, entirely eliminated.



FIG. 28. SPIRE, WEST
END PRESBYTE-
RIAN CHURCH.

Fire-proofing.

PRACTICAL FIRE TESTS.

Fire Curtains. — The only tests with fire curtains which the committee have as yet carried out have been with those made by Mr. Rasmus Bugge. In one instance the curtain was 8 ft. 6 ins. wide and 8 ft. high, and consisted of a woolen material on which three horizontal rows of pockets (made of hard-woven cloth) were arranged. The object of these pockets was to catch any water that might be thrown on the curtain from a hose, whatever water trickled down from the perforated rubber hose pipe extending along the top. The temperature of the fire commenced at 300 degs. Fahr. and increased to 1,500 degs. Fahr. After a test of half an hour the curtain remained in position, though a few small holes had been burnt in it at the top. The question of protecting door and window openings by the use of fire-blinds and screens is an important one, particularly in connection with buildings in narrow thoroughfares; the great Cripplegate fire was an instance where the judicious application of these means would have considerably lessened the spread of the flames.

Glazing. — About half a dozen tests with glazing have been made by the British Fire Prevention Committee, though only one of them was a private test. On two occasions casements glazed by the British Luxfer Prism Syndicate, Ltd., of London, have been tested, the duration of the fire being thirty minutes in one case and forty-five minutes in the other. The casements consisted of electro-glazed squares of plate glass $\frac{3}{4}$ in. thick (4-in. square), framed with a brass border and fixed in rebated teak frames by teak beads; each casement showed glazing measuring 3 by 4 ft., and had 108 squares.

The following summaries show the effect of the fire: — In the first test (that lasting half an hour), the squares remained in position, but seven out of the 324 (there were three casements) were broken, and pieces fell out of them. After twelve minutes the whole area of the glazing commenced to bulge inwards, and in twenty-one minutes the top part of the center casement sagged and left a space between the glazing and the teak frame, which was charred to a depth of about $\frac{1}{2}$ in. on the inside. No glazing bars were broken or appreciably oxidized. The second test (that lasting three quarters of an hour) was less satisfactory, for after considerable bulging inwards and outwards the glass in two of the casements fell in (after about thirty-five minutes), though the third casement remained in position. Five skylights glazed by the British Luxfer Prism Syndicate, Ltd., each showing 1 ft. 8 ins. by 3 ft. of glazing, and having 45 glass prisms 4 ins. square, were tested, but four of them fell in within half an hour, the highest temperature recorded being 1,225 degs. Fahr. Two tests have been made with casements and skylights glazed with wired glass by Messrs. Pilkington Brothers, Ltd., of St. Helens and London. Each of the casements showed 2 ft. 9 $\frac{3}{8}$ ins. by 3 ft. 11 $\frac{1}{2}$ ins. of glazing ($\frac{1}{4}$ in. thick) in the clear, and though the glass was very much buckled and fused, it was

unbroken at the end of forty-nine minutes; the highest temperature recorded was 1,760 degs. Fahr. The test with the skylights lasted half an hour, and at the end of that time the glass was intact and had not let fire through; the highest temperature was about 1,500 degs. Fahr.

A most interesting test undertaken by the committee was with three casements; one glazed with $\frac{1}{4}$ -in. plate glass, one with 32-oz. sheet glass, and one with "lead lights." The following is a summary of the effect: Within six minutes flame burst through the 32-oz. glass and half the sheet had fallen, the other half falling within twelve and one half minutes. After seven minutes the lead glazing collapsed, and after twelve minutes the fire came through the $\frac{1}{4}$ -in. plate casement, the whole sheet falling within fourteen minutes. It is important to note that all three casements fell in less than a quarter of an hour, and no water was applied. The protection of the ordinary window and skylight openings has been all too long neglected, and the results mentioned above should therefore be of special value.

Partitions. — One of the early tests made by the committee was with a lath and plaster partition and a brick nogged partition. One portion of the former was made with wood lathing and the other portion with plain wire lathing; while the brick-nogged partition showed two kinds of construction, — brick laid flat, and brick on edge. Three weeks and a half (spring) were allowed for construction. At the end of the test (which lasted an hour) the lath and plaster partition was practically destroyed, the fire breaking through the plastering on wood lath in twenty-eight minutes, at about 1,600 degs. Fahr., and through that on wire lath in forty minutes, at about 1,750 degs. Fahr. The brick-nogged partition resisted the fire for the hour, although the plastering was disintegrated and the studs charred. The comparatively long resistance of these partitions was no doubt due to the fact that the plastering went from floor to ceiling, not stopping short behind a skirting as is often done in ordinary work; it frequently happens that the fire first breaks through at the skirting.

In November last a test was made with a partition erected by the "Gypsine" Brick Company, Ltd., of London and Paris. It was 7 ft. 9 ins. by 10 ft., and the bricks of which it was constructed were 13 $\frac{3}{8}$ ins. long, 7 $\frac{3}{4}$ ins. deep, and 3 $\frac{1}{4}$ ins. thick. They were made of "a mixture, by means of water, of plaster, hydraulic lime, some sort of neutral material, such as coke, sand, etc., and a fire-proof material, such as asbestos, with an addition of sulphuric acid." The joints on the fire side were raked out for $\frac{3}{8}$ ins. and filled in with fire-clay, the whole surface of the partition being afterwards covered with a thin coating of the same material. The test lasted one hour. A portion of the fire-clay coating fell when heat was applied, and a further portion (and nearly all the pointing) on the application of water. The bricks were sodden with water, but in no place did the fire pass through the partition, which, on the outer surface, was never hot enough to ignite a match. The partition erected by the Mural and Decorations Syndicate, Ltd., of London, consisted of wire lathing stretched between rods and having pieces of terra-cotta burnt on at the

junctions; three coats of plaster were given to each side. The highest temperature reached was 2,130 degs. Fahr. On the application of water to the fire side of the partition a considerable portion of the setting coat was washed off. The outside temperature was too hot to bear the hand, though not sufficient to light a vesta by contact. The fire did not pass through the partition. The test lasted an hour and a quarter.

A match-boarded partition filled in with slag-wool, erected by Messrs. D. Anderson & Son, Ltd., and Messrs. J. C. Broadbent & Co., Ltd., both of London, was tested for three quarters of an hour with the following result: "The internal boarding ($\frac{3}{4}$ ins.) was completely destroyed, and the slag-wool was fused and blackened on the inside face, but the fire did not pass through it. The outside boarding was sound and clean. The maximum temperature was 1,840 degs. Fahr. In this case the slag-wool was carefully packed; on a previous occasion it was not, and the fire broke through.

Protective Coverings.—The committee have as yet only had one test with protective coverings, that with girder coverings made by the "Gypsine" Brick Company, Ltd., of London and Paris. Two steel joists, each 7 by $2\frac{1}{4}$ ins., were placed across the hut; one was covered with the protective material till it was $15\frac{1}{4}$ by 9 ins., and the other till it was $12\frac{1}{4}$ by $4\frac{3}{4}$ ins. Two weeks were allowed for construction and drying. The fire lasted one hour, and the highest temperature recorded was 1,740 degs. Fahr. The following observations were made at the end of the test:—The composition around the larger beam remained attached all round (though it was very sodden from the water applied), and the girder was not affected. A layer of material $\frac{5}{8}$ ins. thick had dropped off the beam of smaller section, the sides showed vertical cracks, and the material was sodden and easily impressed.

Treated Wood.—The test with certain boards treated by the British Non-flammable Wood Company, Ltd., of London, should, perhaps, come under the heading of "partitions," but they were only arranged in this form for the sake of convenience. The impregnated boards were of yellow pine, and were 1 in. thick. There were three stages in the test: first, the application of flame for five minutes from one side at a temperature of 1,000 degs. Fahr.; then at the same spot for ten minutes at a temperature of 1,150 degs. Fahr.; and, lastly, at a second spot for fifteen minutes at a temperature of about 1,300 degs. Fahr. The effect was as follows: No incandescence or spread of flame was observed, nor did the material, so far as could be seen, contribute in any way to the spread of flame. The surface of the boards was charred.

It will be seen from the particulars given in this article, and the one preceding it, that the British Fire Prevention Committee (of which Mr. Edwin O. Sachs is the founder and chairman) are doing a most useful work in conducting these independent tests. While disastrous fires are so frequent, the science of fire-proof construction must be pursued and perfected till it is thoroughly effective, and all those who contribute towards this end must certainly deserve the unstinted praise of their fellow-men.

Inferior Cement in the American Market.

NOTWITHSTANDING the high character of the best American and German cement which is available in our markets to-day, there is a large amount of second and third grade material sold which is more or less inferior in quality.

English Portland cement was, up to ten or fifteen years ago, our chief source of supply. In 1880 nearly three times as much was imported from Great Britain as from the Continent, but it was largely superseded by the German cements when the superior quality of the latter became understood. English cements were for many years underburned and low in lime. They were quick setting and of no great strength, and large quantities were sold in the United States without the name of any reputable firm on the packages. Under the spur of competition the quality has now been considerably improved, so that several brands are to be had to-day which ordinarily compare very well with the German product, although they would not even now, probably, be selected for surface work such as sidewalks. The great mass of cheap and inferior English cements are becoming less common, but their places have been taken by the Belgium and American cements of the same class, with which the market is flooded.

In Belgium cements of several kinds are made. A rock is found there in abundance which has nearly the proportions necessary for a good Portland cement. According to a report of the United States Consul, one of the rocks in use has the following composition:—

Silica	15.75
Alumina	3.95
Iron oxide	1.00
Lime	43.10
Magnesia49
Sulphuric acid50
Carbonic acid and water	35.21

This is largely burned in its natural condition to sintering, and a so-called natural Portland cement made from it without further manipulation. Of course, it is very seldom that this is of normal composition and properties, but owing to the economy possible in its manufacture it can be put on the market at a very low price. It has a corresponding value, and has been largely sold in certain parts of America under brands having the names of various animals, birds, etc. A test of one of these cements from the New Orleans market resulted as follows:—

	Neat Mortar.		Sand Mortar 1 to 3.	
	Tensile.	Crushing.	Tensile.	Crushing.
7 days	326	1635	58	482
28 „	466	2700	120	798

This is plainly a very inferior cement.

In this country there are found several inferior forms of cement sold as Portland, which are not of normal composition and character. Among these is a cement which was intended for a high-grade material, but which from lack of care in burning or departure from a normal composition must be sold as second grade. Such a cement now on the New York market analyzes and tests as follows:—

ANALYSIS.

	Per cent.
Ignition	3.66
Silica	21.90
Alumina	9.08
Iron oxide	2.92
Lime	56.00
Magnesia	3.02
Sulphuric acid	1.62
Alkalies	Undetermined

Then there is the "improved" cement made by the addition of the preceding material in certain proportions to natural rock cement, tests of which were given in connection with those of natural cement, and the ground, overburned and partially sintered rock, which is a by-product in the burning of natural cements. Tests and analysis of this material, product, or third-grade Portland cement are as follows:—

Silica, uncombined	6.36
Silica, combined, SiO_2	19.50
Alumina oxide Al_2O_3	7.74
Iron oxide Fe_2O_3	3.06
Lime oxide CaO	52.10
Magnesia oxide MgO	3.05
Sulphur SO_3	1.48
Potassium oxide K_2O98
Soda oxide Na_2O	1.16
Ignition $\text{Aq}+\text{CO}_2$	5.30

SILICA PORTLAND CEMENT.

Besides these cements there is another class, consisting of good Portland ground together with about half its weight of sand or limestone to an impalpable powder, which, if sold on its merits, and at a proper price, is, no doubt, of great value and importance, as experiments have shown the Portland cement used in this way can be made to go very much further than in any other, without corresponding loss of strength. The results obtained with such a cement were as follows:—

Cement and sand, 50 per cent. of each, ground to—

	Sand Mortar — 1 to 3 Tensile. Crushing.
7 days	152, 160, 154 1556
7 days	160, 156, 158 1700

The cause of this apparently impossible result is that the two materials are ground to an impalpable powder, and most thoroughly mixed. In this condition the finely ground silica serves to fill the voids in the sand and to join with the cement in making a mortar which will fully cover and enclose the sand particles. The smaller amount of actual cement is, therefore, able to do the work, in conjunction with the powdered silica, that a volume of pure cement equal to that of the mixture would do.

It is important, and in fact necessary, however, that the cement and sand should be ground together so intimately that they are thoroughly mixed and extraordinarily fine. As soon as this condition fails to be realized, there is an immediate failure in the results.

For the successful accomplishment of the grinding and mixing, the tube mill seems to be the best suited. While in practice not more than equal volumes of sand and cement have been ordinarily used, most remarkable results have been obtained when one part of cement was ground with six parts of beach sand. Tests of this material with two parts of sand at seven days gave from 60 to 80 lbs. tensile strength.

SLAG CEMENT.

There is another form of hydraulic cement which has only of late made its appearance in the American markets, although it has been known commercially on the Continent since 1882–83. This is called properly slag cement, as it is made by grinding slag together with slaked lime. Blast furnace slag is used for the purpose, and it is, unfortunately, a very variable material in composition, according to the ore in use, the amount and kind of flux, and the temperature. It consists mainly of silicates of lime and alumina, but it may be basic, neutral, or acid in composition. Physically, it may vary very much, some forms being permanent when exposed to the weather, and used for ballast or for bricks, other forms falling to pieces on exposure.

The basic form alone is suitable for cement making, and this only when it has been granulated by running it into water while in a very fluid and thin condition. What the effect of granulation is is not entirely understood, but it is evident that in sudden cooling there is a different arrangement of the constituents from that which takes place on slow cooling. The method of granulation is important. It should be done while the slag is hot and very liquid, and plenty of water used. In the operation sulphur is partly removed. The product is a more or less sharp, pumice-like, partly transparent material, and the result of the operation is that in the granulated form the silica is in a condition to combine with lime in the presence of water, gelatinizing readily with acids.

Greenish-gray slags from gray cast iron are much better than the yellow foaming kind, but in any event the ratio of lime to silica, CaOSiO_2 , must not sink as low as 1, for slags of this description are useless. It ordinarily runs from 1.72 to .64, so that many kinds are of no value. The more basic they are the better.

With the same operating methods uniform slags may be produced at any one furnace, but at different points the greatest variety is found.

Slags for cements must, of course, be free from magnesia and not contain much sulphur, but some of the latter is lost in the act of granulation. Fresh slags are more actively hydraulic. Although on storage they lose some sulphur, they have not the same lime capacity, but are, nevertheless, more reliable. The grinding of the granulated slag, like all operations of this sort in cement making, must be very thorough. According to Tetmajer, it must be so fine that not more than 8 per cent. shall remain on a sieve of one hundred and seventy-eight meshes to the lineal inch.

The lime used in slag cement is well-burned caustic lime free from magnesia, which has been thoroughly slaked, or in some instances hydraulic lime, which has been found to have no injurious effect on the strength and a favorable one on the soundness of the product. The caustic lime slaked by either the method of packing it in baskets which are immersed in water and the saturated lime piled in heaps for some time, or it is spread in layers 4 to 8 ins. deep and sprinkled with water until slaked, when it is heaped up under cover and left fourteen days. Then the slaked lime obtained in either way is screened from the coarser particles, and finally the finest meal obtained by air-blast separators or bolting.

Machines have also been designed for carrying out the operation of slaking rapidly, and at times attempts have been made to slake the lime with the water adherent to the granulated slag.

The fine powder is usually stored for some time to completely slake it, as much more favorable results are obtained with such material. It should then be soft dust and free from any hard particles which might eventually become hydrated in the cement and cause expansion and checking.

The ground slag and lime are best mixed by a second grinding together in the proper proportion, which has the double object of reducing the product to an even more minute state of subdivision, and bringing about a thorough mixture, and thus preventing any tendency to checking and expansion.

The best Swiss slag cement from Chonidez, prepared in the way that has been described, has, according to Tetmajer, the following properties:—

Specific gravity 2.63—2.75
Volume weight, loose . . . 62.3 lbs. per cu. ft.
" " packed . . . 101.0 " " " "

Strength of Mortar, 1: 3; German Normal

Sand in water,

Water for Mortar, 10.5 per cent.

	Tensile.	Crushing.
7 days	144—252	1276—1847
28 "	305—417	3195—3870
84 "	451—550	4630—5344
1 year	562—660	4929—5766
2 years	569—631	5376—5948

Strength of Mortar, 1: 3, Building Sand.

	Water.	Air.
7 days	203	227
28 "	452	296
84 "	489	313
210 "	568	356
1 year	519	433

The proportion of lime added to the slag will vary from 25 to 100 per cent., according to the capacity of the slag for bases. Tetmajer considers that these and other tests, as well as the results of its practical application, show that this slag cement is particularly suited to work under most varying conditions in water, in damp places, out less so in air; and that while it should be allowed to set before being acted upon by water, it is less affected by it than other hydraulic cements. Its great disadvantage, on the other hand, he shows to be its tendency to form, in air, surface cracks, the more so the higher the lime, these being due as much to drying out of the mortar and consequent contraction as to deficiency in composition. He also finds that as the hardening of slag cements is due to the hydrating of the silica of the silicates by water, the presence of an abundance of this is necessary at all stages of the process, and that if the cement is allowed to dry out this will come to an end. The slag cements, therefore, do particularly well in moist localities.

Not all slag cements are as satisfactory as that which has been described. Where the slag comes from a furnace, the proprietor of which has no interest in making a suitable or uniform product for cement making, the resulting cement is very variable and inferior, and may give the best material of its kind a bad name. Most of this material has been put upon the market in Germany.

Selected Miscellany.

NOTES FROM NEW YORK.

The general state of affairs in the building world is good, although there is a dearth of large transactions, which is perhaps natural at this time of year.

On October 7, the cornerstone of St. Peter's R. C. Church, Staten Island, was laid. From the published



VIEW OF GENERAL WAITING ROOM, UNION STATION,
DAYTON, OHIO.
Elzner & Anderson, Architects.

drawings this promises to be a very handsome structure. It is in the Romanesque style, and will be built of brick with terra-cotta trimmings, — another tribute to the fast-growing popularity of these materials for buildings of beauty as well as utility. The architects are George Edward Harding and Gooch of New York City.

My attention has been called recently to an old game which contractors from times remote have worked, and for which young architects should be on their guard.

The contractor will write asking if, as a favor, you will kindly allow him to use a brand of roofing tin of which he has a stock on hand instead of the one specified. He



CAP, PEABODY & STEARNS, ARCHITECTS.
Atlantic Terra-Cotta Company, makers.

assures you that it is just as good, costs just as much, and will save considerable time if he can use it. Twice within a year I have investigated and found that the article mentioned was worth in one case only half as much as the article specified, and in another case only one fifth, although we regret exceedingly to impute any dishonest thought or action to such proverbially honest and upright men as contractors.

It is hardly necessary to remark upon the practice of the acceptance by architects of commissions from contractors or manufacturers. Certainly, no architect can be innocent of the fact that it is not only reprehensible, but absolutely dishonest. There is, however, a tendency to overcome this and ease the conscience by accepting gifts of more or less value, which is not only just as bad, but the architect himself is the worst sufferer, as he thus allows a mortgage to be placed on his professional life with foreclosure as a sure result. I have in mind the case of a friend who upon his birthday was presented by a firm of woodworkers with a beautiful leather-covered easy-chair. It was done in a gentlemanly way and as a token for past favors. The architect, although it must have cost him a pang, had it sent back in just as gentlemanly a way, felt better for it afterwards, and no offense was taken on either side.

NOTES FROM CHICAGO.

A number of leading hotel and restaurant proprietors are planning the erection of a model cooperative laundry



ST. JOHN'S HOSPITAL, ST. LOUIS, MO.
Barnett, Haynes & Barnett, Architects.

plant to cost in the neighborhood of \$100,000, in order to do away with the expense and inconvenience of doing laundry work on their own premises. Should it prove a success, the same people talk of establishing a cooperative warehouse.

Mr. Dwight Heald Perkins has been appointed architect of Hitchcock Hall, a new dormitory building to be erected for the University of Chicago, and has been sent abroad to study the collegiate buildings of England, particularly those of Oxford. He will return about the first of November.

The annual meeting of the Chicago Architectural Club was held at the Art Institute, Monday, October 1, at which the following officers were elected: President, Henry K. Holsman; vice-president, Robert C. Spencer, Jr.; secretary, Birch Burdette Long; treasurer, Adolph Bernhard.

Pond & Pond are designing the new Northwestern University settlement building.

Shepley, Rutan & Cool-



DESIGN FOR WILDER HALL, WELLESLEY COLLEGE, WELLESLEY, MASS.
J. A. Schweinfurth, Architect.

idge are at work on the plans for several new buildings for the University of Chicago, including the new gymnasium.

Marshall Field & Co. have taken out a permit for a new steel and brick retail store building, twelve stories

D. H. Burnham & Co., and involve a total outlay of about \$3,000,000.

NOTES FROM PITTSBURGH.

The United States War Department has approved the



"SUNNYSIDE," SHOWING ALTERATIONS AND ADDITIONS, FROM THE NORTH.
William H. Mersereau, Architect for alterations.

in height, to cover the site of their present retail stores, 83-99 State Street. The firm secured a permit last spring for a building of the same height to cover the remaining portion of the block which is now occupied by Central Music Hall and the two stores south of it. They are ready to cover the entire block with a

plans of the Pennsylvania Company for the rebuilding of their bridge across the Allegheny River; the plans call for a bridge of the same height as the present one, and this disposes of the question whether the other bridges would be raised.

A large hotel and apartment house is to be built on



"SUNNYSIDE," BEFORE ADDITIONS WERE MADE.

building two stories higher than the present building ordinances permit. It is said, however, that only the Music Hall end will be built at first, probably beginning next spring if present labor difficulties are disposed of before that time. The plans have been prepared by



"SUNNYSIDE," AFTER ADDITIONS WERE MADE.

North Avenue, Allegheny, to cost \$500,000. The papers announce that the owner has prepared his own plans.

A library building is to be built at Beaver, Pa. It is presented to the town by Mr. Carnegie.

This recalls the fact that, in several instances, similar

offers of Mr. Carnegie have resulted in such bitter disputes between factions that he has been obliged to withdraw



PLAN, FIRST FLOOR, "SUNNYSIDE," SHOWING ALTERATIONS AND ADDITIONS.

the offer; lately, in one town, an old burying-ground was obtained by the trustees as a library lot. After they



APARTMENTS, 94TH STREET AND CENTRAL PARK WEST, NEW YORK CITY.

James E. Ware & Sons and H. S. S. Harde, Associate Architects.
Fire-proofed by the National Fire-proofing Company.

had carefully removed all the bodies, the dispute broke out again, the offer was withdrawn, and now the town is trying to make the trustees pay for the work already done, amounting to over \$2,000 for each trustee.



CAP, CHARLES I. BERG, ARCHITECT.
Perth Amboy Terra-Cotta Company, makers.

Peabody & Stearns, of Boston, have let the contract for a new residence on Forks Street, to cost \$70,000.

NOTES FROM ST. LOUIS.

It is hard to find a good excuse for the continued dullness in the building line, with so much activity in other directions, unless it is the uncertainty existing as to whether the World's Fair will be held here. This question is to be determined by the voters at the coming election through the adoption or rejection of amendments to the city charter permitting the issuing of \$5,000,000 of bonds in aid of the Exposition, Congress having appropriated a similar amount conditional upon the city expending \$10,000,000, the half of which it is expected to raise by subscription.

Mr. T. S. McPheters has completed a cold



RESIDENCES AT ST. LOUIS, MO.
Deitering & Klipstein, Architects.



TERRA-COTTA FIRE-PROOF CONSTRUCTION, FREE PUBLIC LIBRARY, NEWARK, N. J.

Fire-proofing supplied by the Raritan Hollow and Porous Brick Company.
Rankin & Kellogg, Architects.

storage plant, fronting upon both sides of Lewis Street, near O'Fallon Street, with a capacity of one million cubic feet. The building is six stories with a basement, and is connected with about two miles of main distributing pipe, through which it is intended to supply refrigeration to the commission houses. The ice plant has a capacity of 120 tons per day.

Architect Isaac Taylor spent his vacation in Europe, visiting the Paris Exposition before returning.

Mr. T. B. Annan has been appointed chief draughtsman and Arthur Ellicott assistant on the new City Hospital by building commissioner Charles F. Longfellow, the ordinance providing for the erection of the building requiring that the commissioner make the plans and superintend the construction.

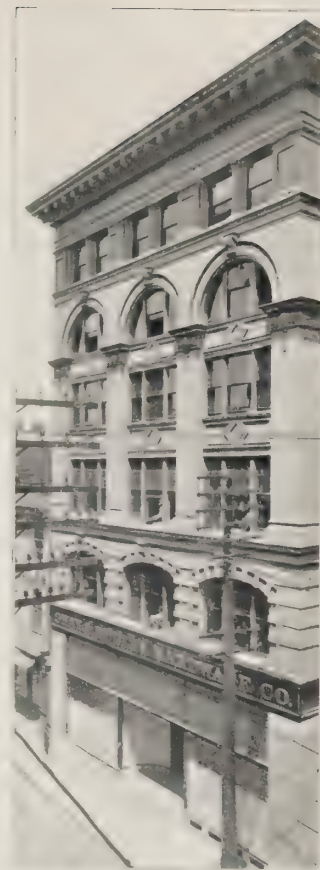
The competition for the new building for the Bank of Commerce resulted in the selection of Mr.

Taylor's design; those submitting drawings being Messrs. Eames & Young, Isaac Taylor, W. A. Swasey, T. C. Link, and Albert Knell.

NOTES FROM DETROIT.

Four years ago building operations in Detroit were at the lowest ebb. This year and this month they are probably pretty near their zenith. Buildings are going up everywhere, and though operations are especially active in residence work, there are quite a few "holes in the ground" from which store, office, and factory buildings are rising. A few interesting buildings are nearing completion: The Eastern High School, which when completed will cost \$175,000, of which Malcomson & Higginbotham are architects; the office building for Berry brothers, cost \$35,000, and a residence for Mr. Wm. M. Finck by architect George D. Mason. All of these buildings are of brick, stone, and terra-cotta, and among the best things, architecturally, in the city.

There have been, and are being, held some interesting competitions for important work. The plans for the Aquarium and Horticultural Building, on Belle Isle, to cost \$100,000, are about to be placed in the hands of an



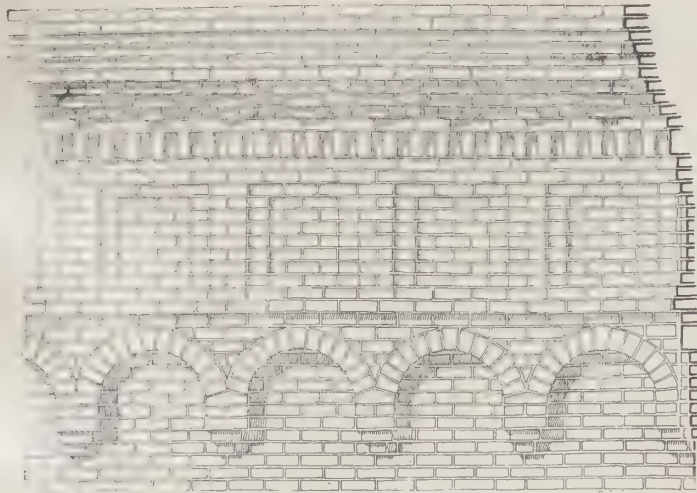
THE GRAY-DUDLEY BUILDING, NASHVILLE, TENN.

Built of gray standard brick, made by the Columbus Brick and Terra-Cotta Company.

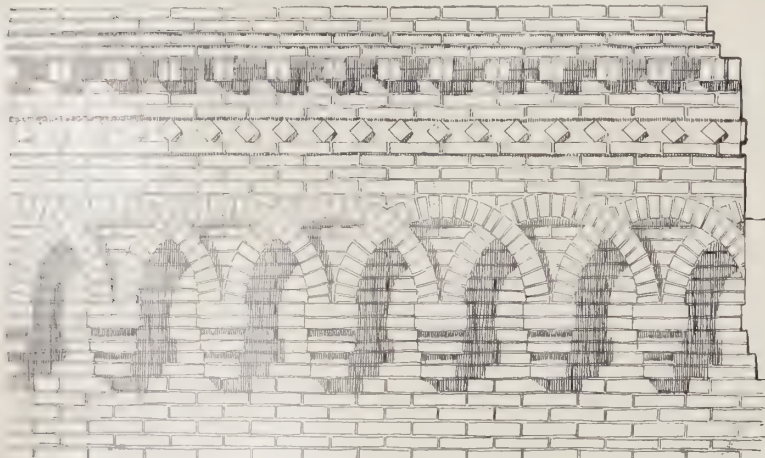


SEMI-DETACHED HOUSES, LOUISVILLE, KY.

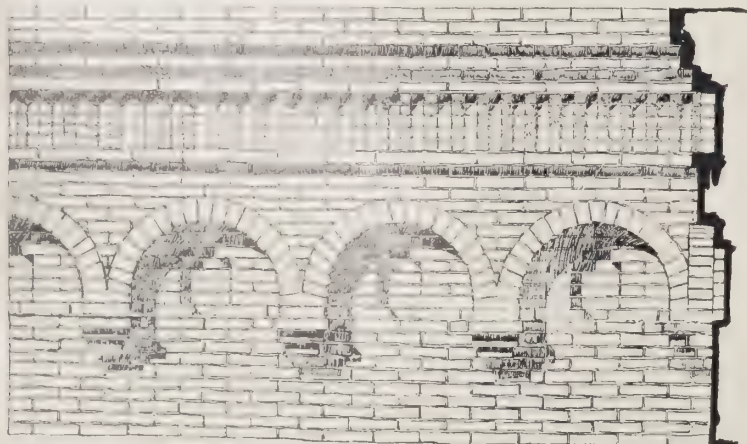
Brick supplied by the Ohio Mining and Manufacturing Company.
Mason Maury, Architect.



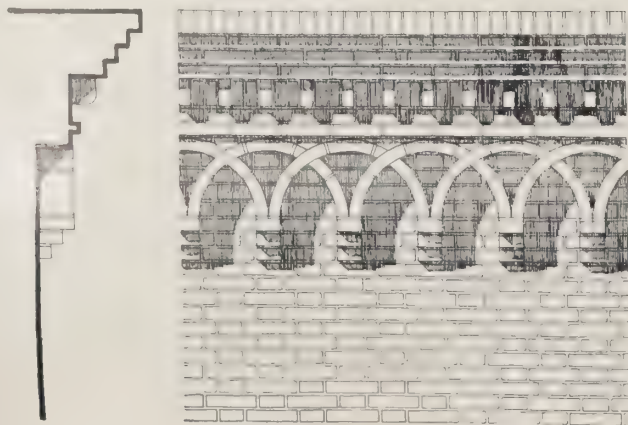
F. N. EMERSON.



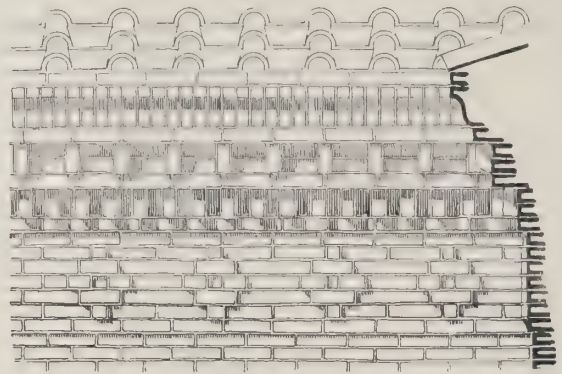
E. LILIENERANTZ.



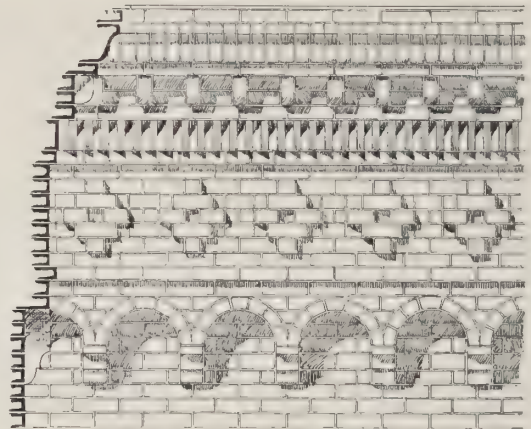
C. V. MERRICK.



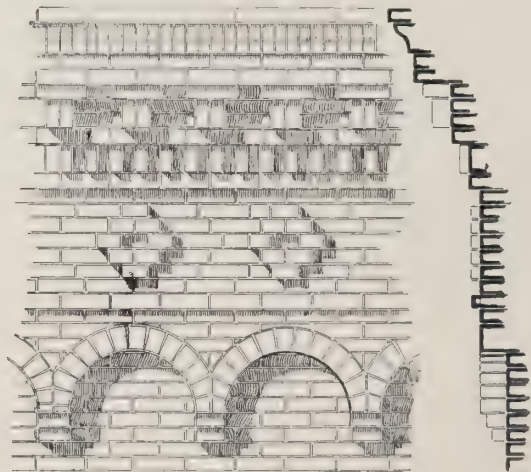
HARRY LESLIE WALKER.



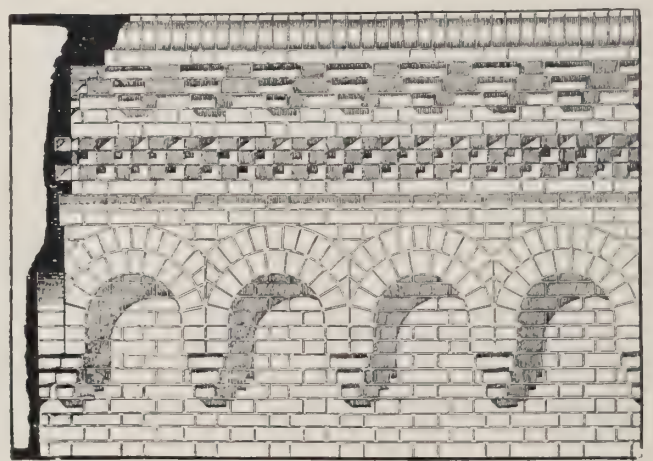
JAMES LOVELL LITTLE, JR.



ARTHUR FRANCIS BUYS.



GEORGE B. FORD.



LEWIS M. LAWRENCE.

The accompanying drawings of brick cornices are the result of the weekly exercise in design given the class in History of Ornament, at the Massachusetts Institute of Technology. It was required to use molded bricks only where necessary, keeping as far as possible to bricks of regular shape.



CHURCH OF "OUR LADY OF MERCY," BROAD STREET, PHILADELPHIA, PA. EDWIN F. DURANG, ARCHITECT.

Roofed with Celadon Roofing Tile supplied by O. W. Ketcham, Agent, Philadelphia.

expert jury, and the outcome is eagerly awaited by some dozen architects who have submitted drawings. The competition for the Maccabee Temple has resulted in an amusing fluke. The committee, after deciding that architect George D. Mason had "by far the best plan" and that "the others were not in it," agreed to disagree over the elevations submitted by Mr. Mason and by Malcomson & Higginbotham, and after a battle of words, lasting three hours, finally decided to employ both parties jointly to carry out a design. Messrs. George D. Mason and Malcomson & Higginbotham are, therefore,



UPPER PORTION STORE AND OFFICE BUILDING, INDIANAPOLIS, IND. VONNEGUT & BOHN, ARCHITECTS. Terra-Cotta made by the Indianapolis Terra-Cotta Company.



DETAIL ON POST-OFFICE BUILDING, NEWPORT, KY. Winkle Terra-Cotta Company, makers.

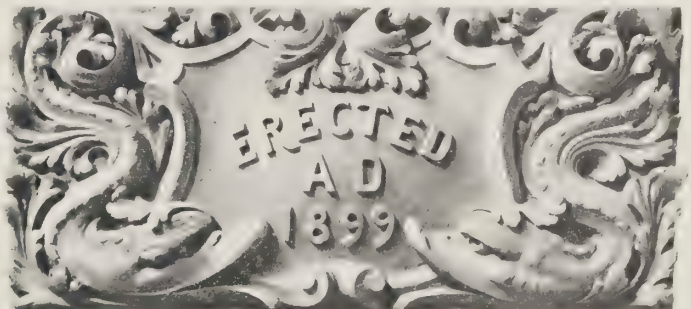
associated architects on this building, which will cost about \$160,000.

George D. Mason and Alpheuse W. Chittenden are associated on some additions and changes to the interior



DETAIL EXECUTED IN TERRA-COTTA BY AMERICAN TERRA-COTTA AND CERAMIC COMPANY.

of the Masonic Temple, and Mr. Mason and Col. James M. Wood are associated in designing the new Empire Theater in Pittsburgh, which will cost \$300,000. In architectural excellence, appointments, and conveniences it



PANEL BY ALBERT W. DILKS, ARCHITECT. Excelsior Terra-Cotta Company, makers.

will surpass any theater of its class in America. It will be Empire in style, will have one balcony but no gallery, and will seat 2,500 people.

IN GENERAL.

On September 29, a meeting was held in Toledo, Ohio, for the purpose of organizing the Toledo Archi-



ORNAMENT FOR CROWN OF WINDOW. New Jersey Terra-Cotta Company, makers.

tectural Sketch Club. The following officers were elected: President, W. A. Stevens; vice-president, Frank Hall; secretary and treasurer, George B. Rhine. It was decided to apply for membership in the Architectural League of America.

The Atlanta T Square Club was organized recently with twelve charter members, who represent the most progres-



DETAIL BY CLINTON & RUSSELL, ARCHITECTS.

New York Architectural Terra-Cotta Company, makers.

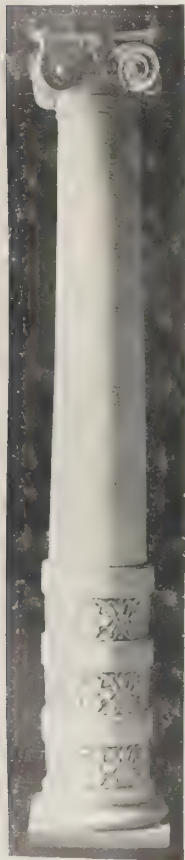
sive draughtsmen and young architects in the southern metropolis.

MISCELLANEOUS ITEMS.

The Standard Terra-Cotta Works at Perth Amboy, N. J., have resumed business.

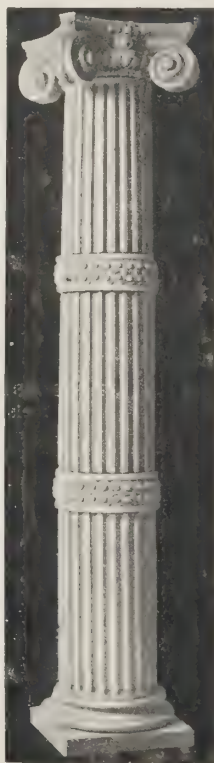
The terra-cotta used in the new Union Station at Dayton, Ohio, illustrations of which are published in the platform for this number, was made by the St. Louis Terra-Cotta Company.

The Hartford Faience Company, Hartford, Conn., have opened an office in New York at 1123 Broadway. R. B. Ives is in charge.



COLUMN, HENRY COHEN, ARCHITECT.
Northwestern Terra-Cotta Company, makers.

Mr. W. D. Richardson, superintendent at the plant of the Ohio Mining and Manufacturing Company at Shawnee, Ohio, gives substantial evidence of his thorough knowledge



COLUMN, OSCAR L. McMURRY, ARCHITECT.
St. Louis Terra-Cotta Company, makers.

of the burnt-clay business in all its phases, in the new book issued by that company, and edited by him, entitled "Manual for Brickbuilders." Within its covers there is contained a fund of information relating to the manufacture and use of burnt clay, especially brick, which will make it a valuable addition to the technical library of any architect or builder. The price of the work has been set at fifty cents, but, undoubtedly, it will be sent without charge to those who have been, or are likely to be, patrons of the company.

The National Fire-proofing Company have received the contract for the new Atlantic Mutual Insurance Building, Wall and William Streets, New York City, Clinton & Russell, architects.

The Powhatan Clay Manufacturing Company are furnishing their salt and pepper gray bricks for the new



DETAILS BY GEORGE B. ROGERS, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, makers.

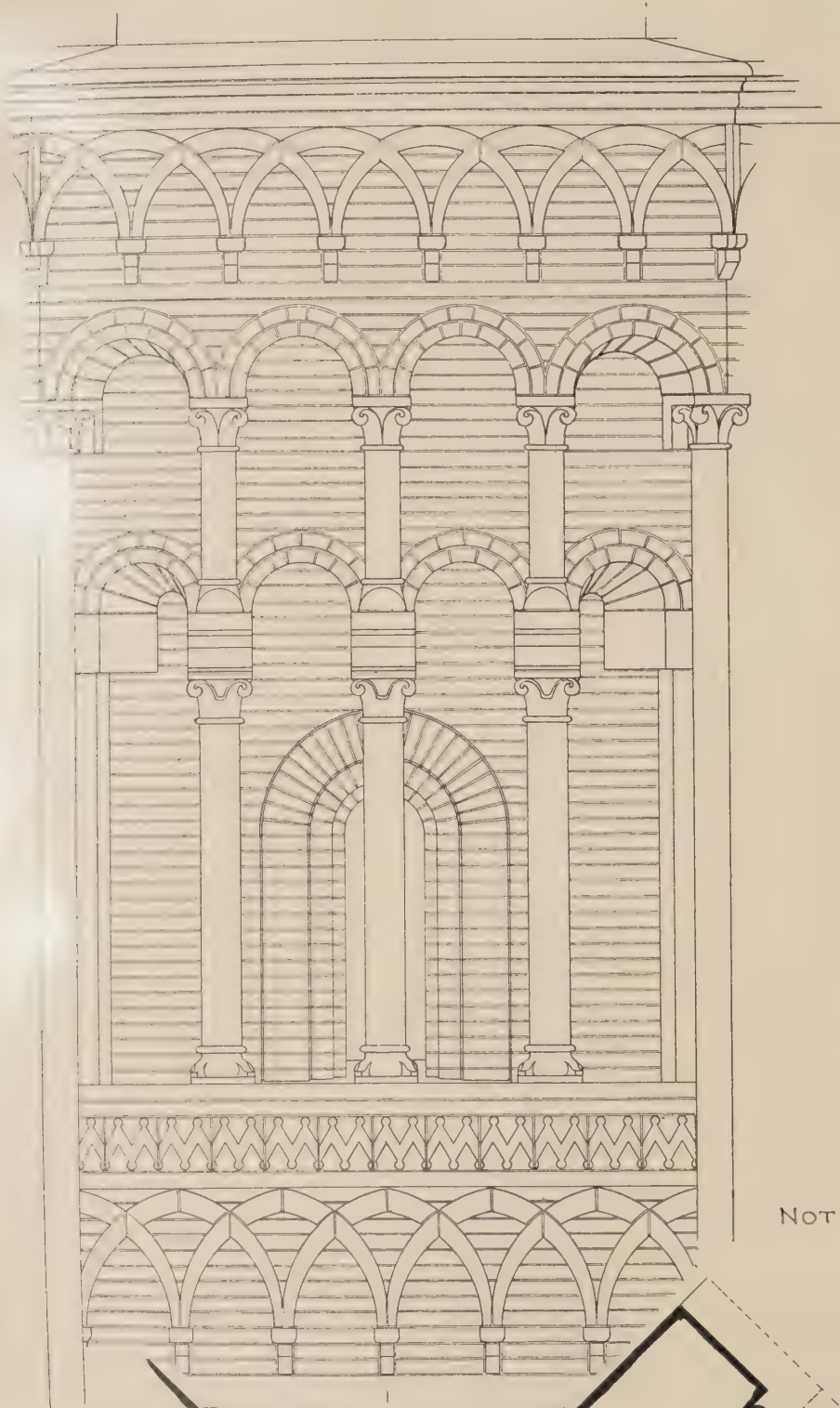
Union Station at Columbia, S. C., Frank P. Milburn, architect; also for the new City Hall at Columbia.

The Ludowici Roofing Tile Company, Chicago, has issued an interesting pamphlet in which is illustrated many new railway stations which have been roofed with their tile. These illustrations are of stations by Frost & Granger, Walker & Kimball, W. T. Krausch, Cass Gilbert, Shepley, Rutan & Coolidge, and C. A. Reed, architects.

THE ATELIER FITZWILLIAM, AUDITORIUM BUILDING, CHICAGO.

GIVES each month twenty-five cash prizes, aggregating \$145, for the best designs in an architectural sketch competition. At the close of each month a list of the names and addresses of prize winners are sent to each competitor, together with a critical comment on the faults and merits of his own design. Any one can enter these competitions for \$1 per month. Write for program of November competition, "A Two-story Oriel." We reserve the right to retain any or all of the prize designs, and when satisfactory reproductions of these are obtainable, a series of them will be sent to each competitor also.

DETAILS OF ITALIAN BRICKWORK
MEASURED AND DRAWN BY WILL S. ALDRICH.

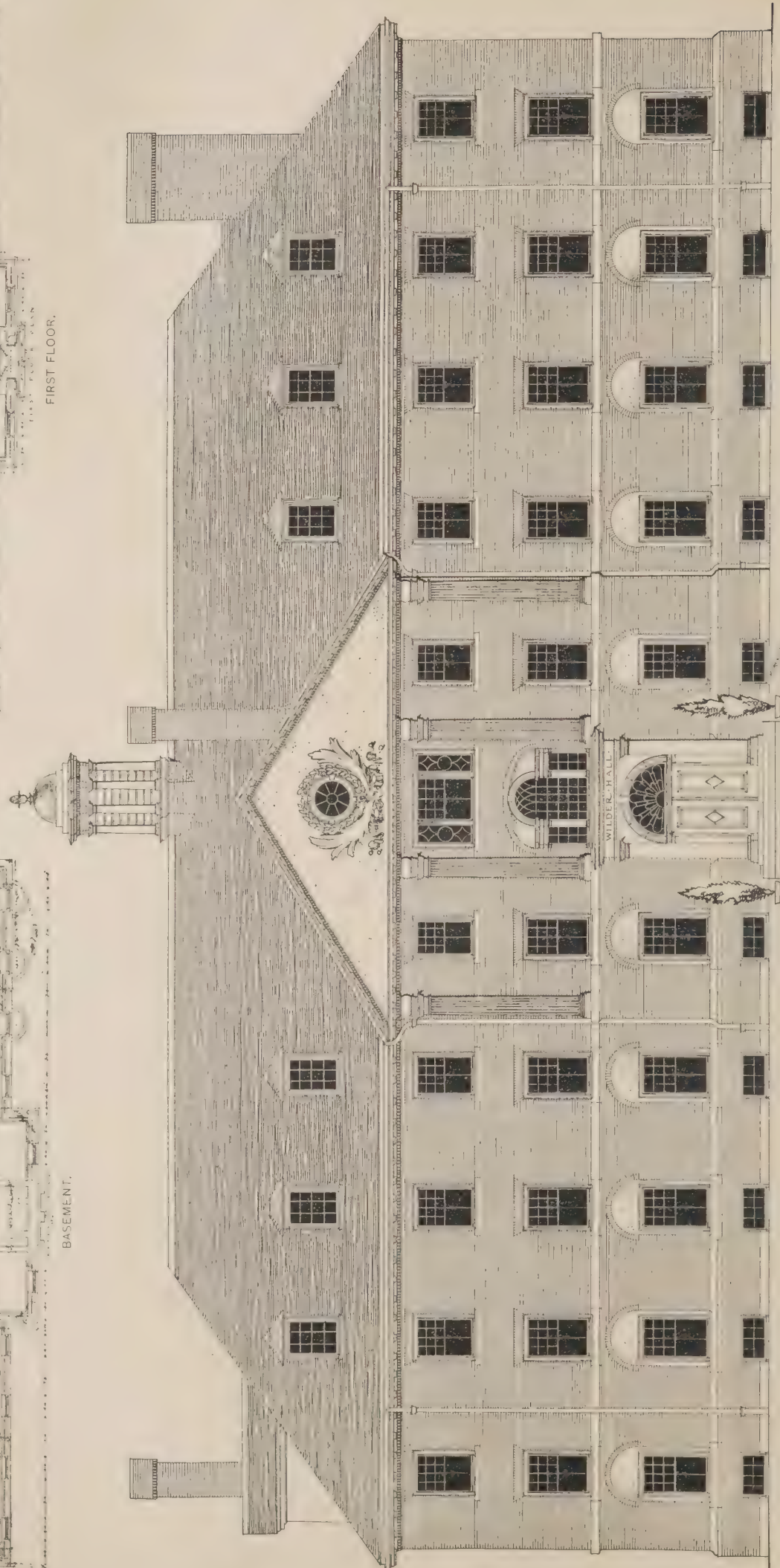
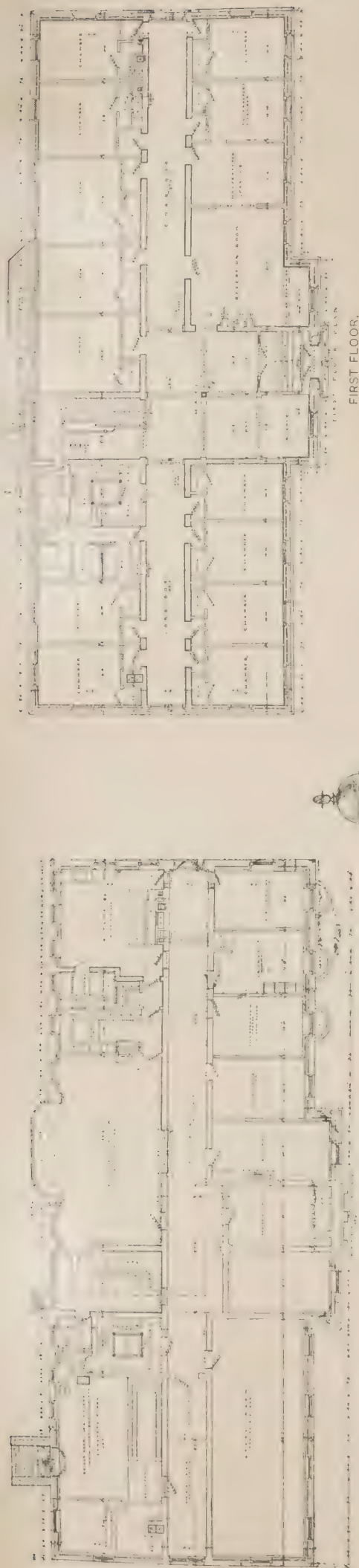


NOTE · STONE - WHITE MARBLE
BRICK - DEEP RED ·

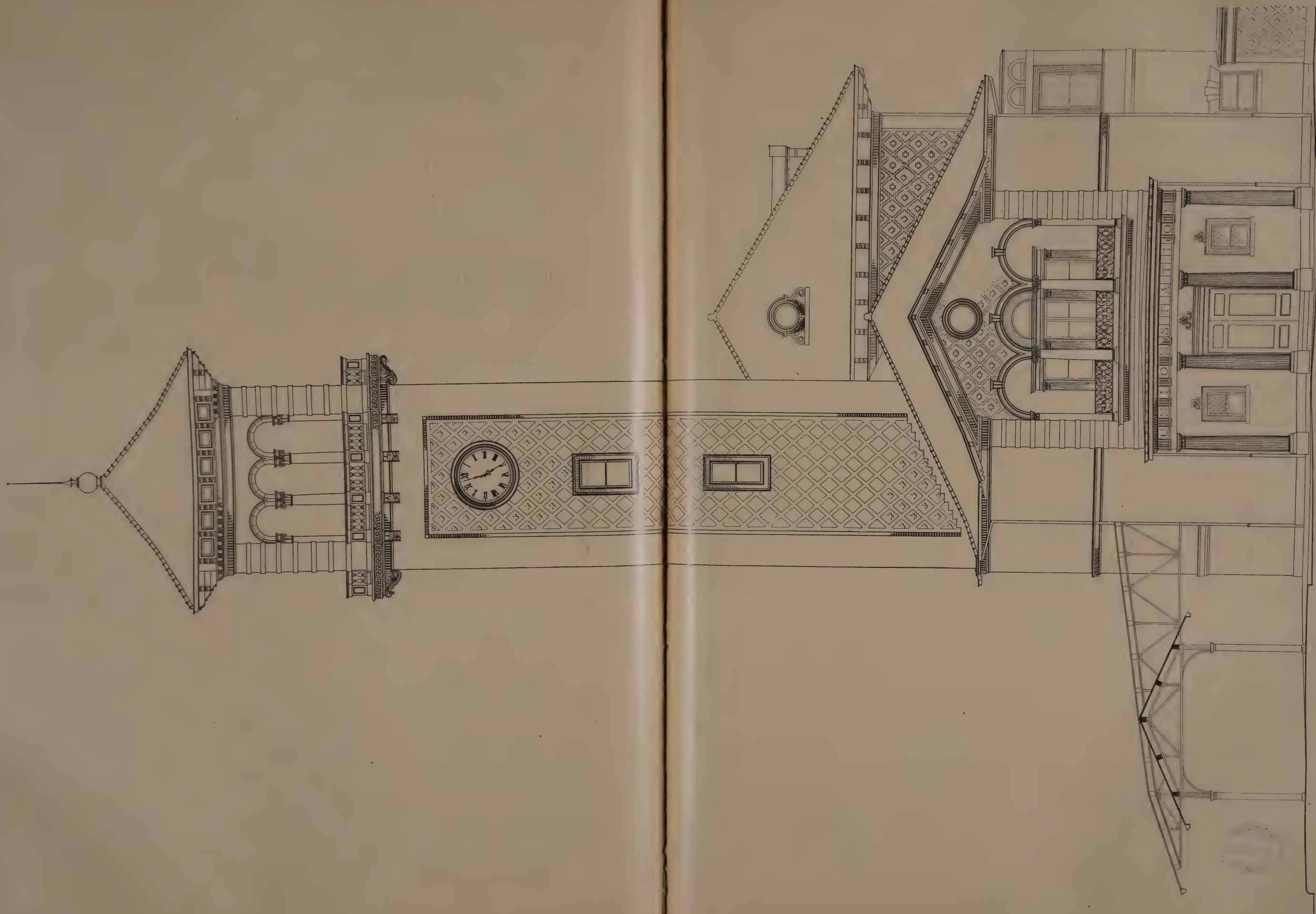
CAMPANILE OF S. GOTTARDO ·
MILANO ·

DETAIL OF TOP STORY
OF MAIN SHAFT ·

12' 0' · SCALE · 5'



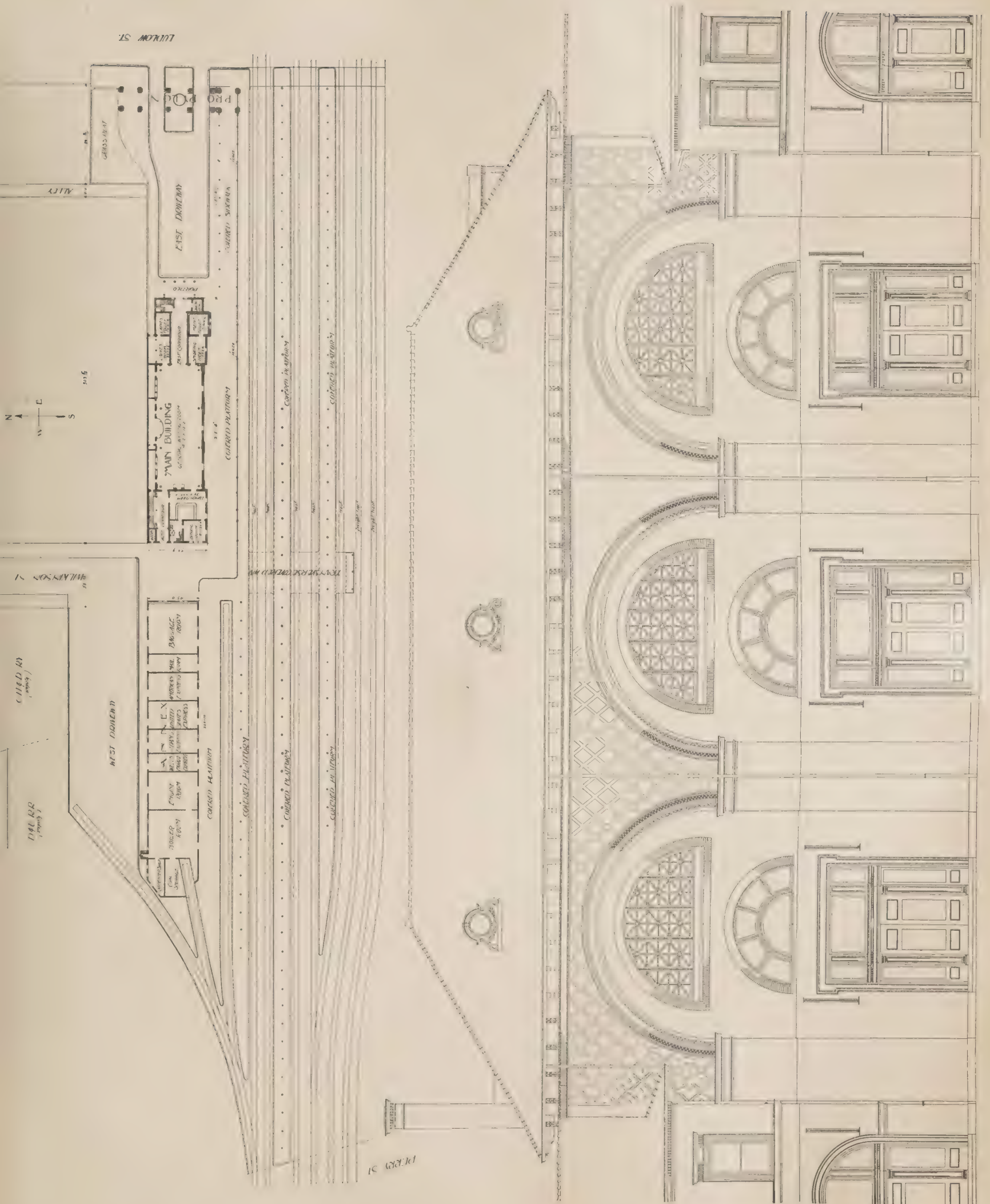
WILDER HALL. DORMITORY, WELLESLEY COLLEGE, WELLESLEY, MASS.
J. A. SCHWEINFURTH, ARCHITECT.



FRONT ELEVATION.
UNION RAILWAY STATION, DAYTON, OHIO.
ELZNER & ANDERSON, ARCHITECTS.

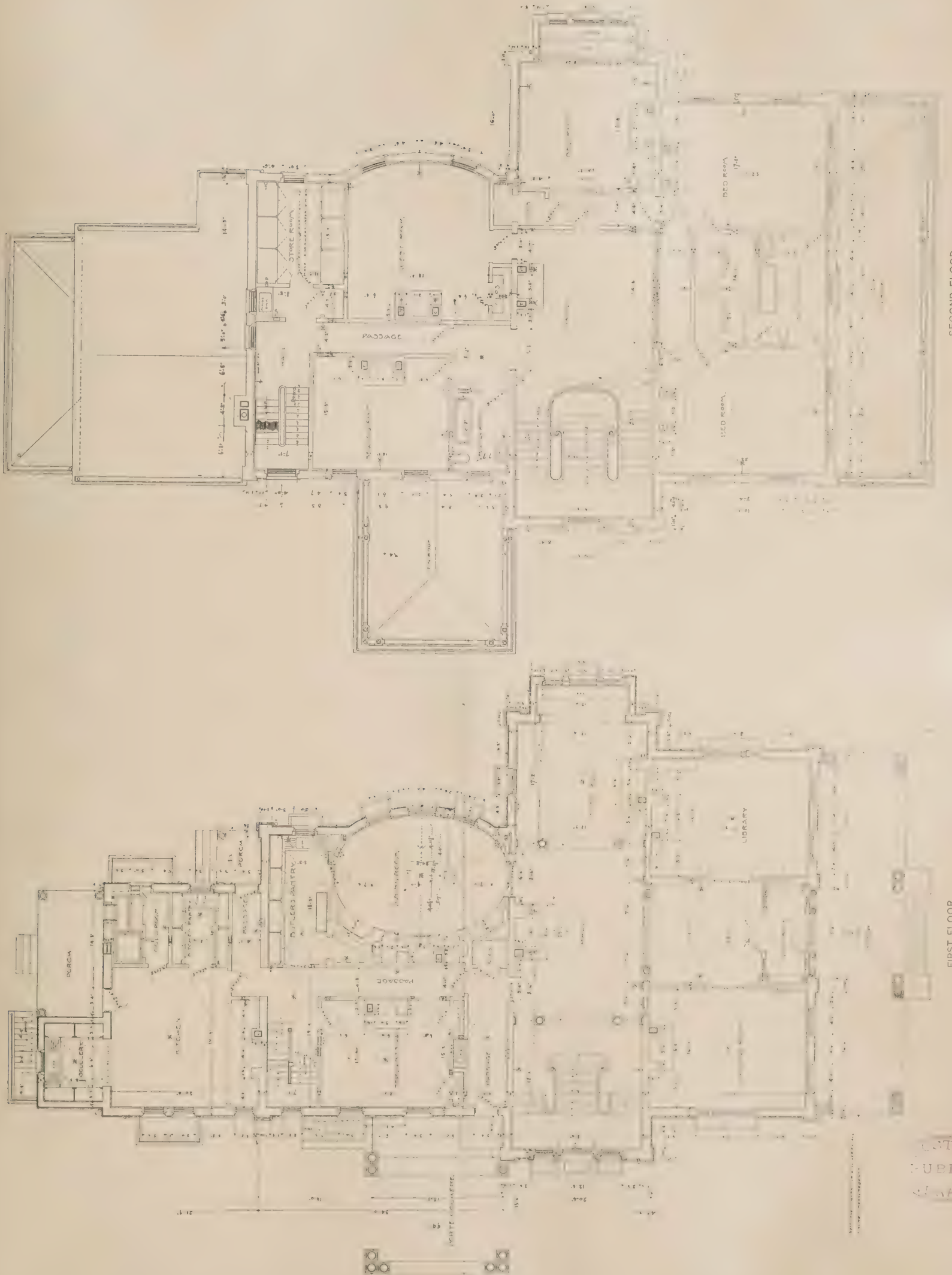


DETAIL OF PAVILIONS, FRONT ELEVATION, CORNELL MEDICAL COLLEGE, NEW YORK CITY.
MCKIM, MEAD & WHITE, ARCHITECTS.



SIDE ELEVATION.
UNION RAILWAY STATION, DAYTON, OHIO.
ELZNER & ANDERSON, ARCHITECTS.



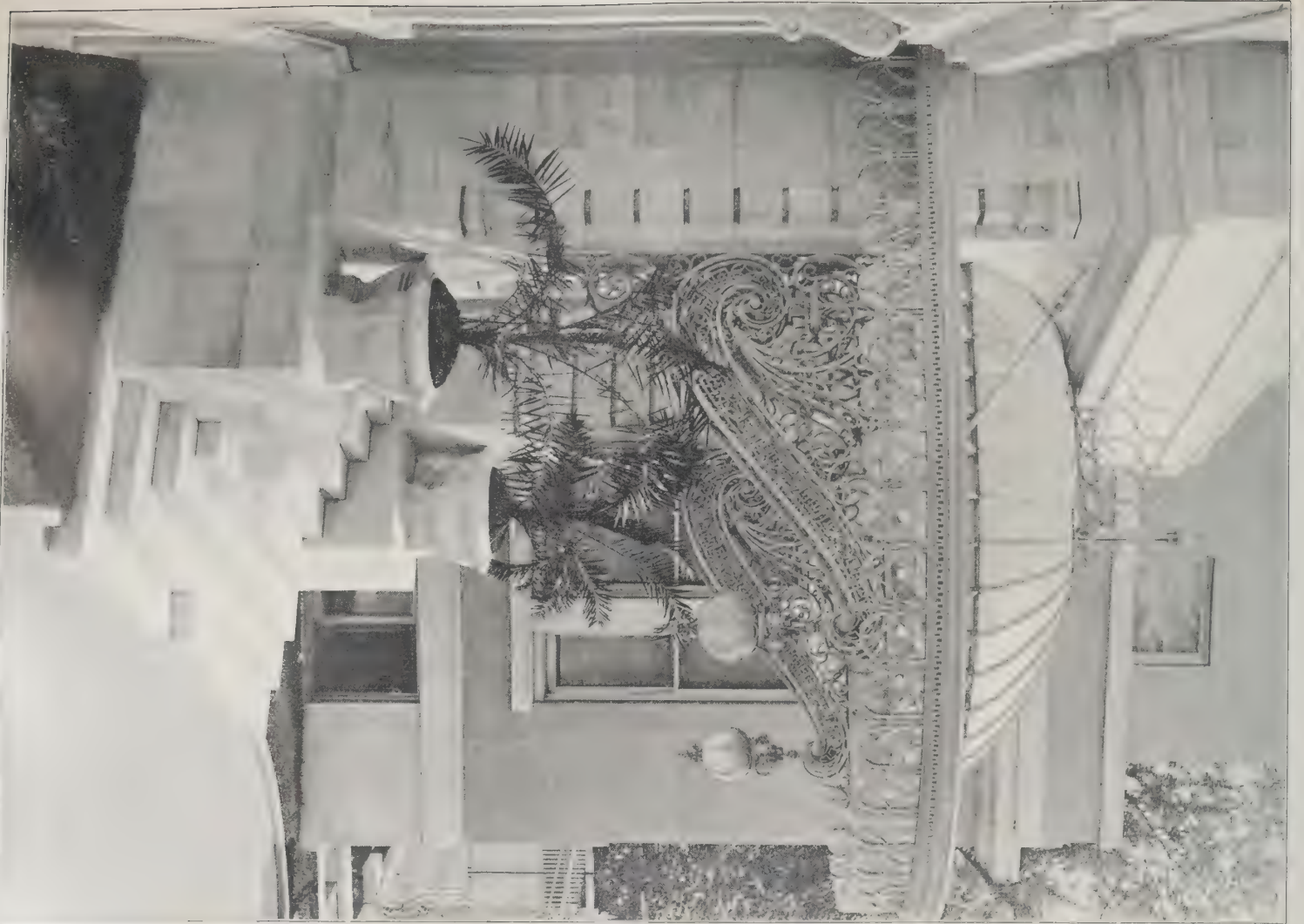


SECOND FLOOR.

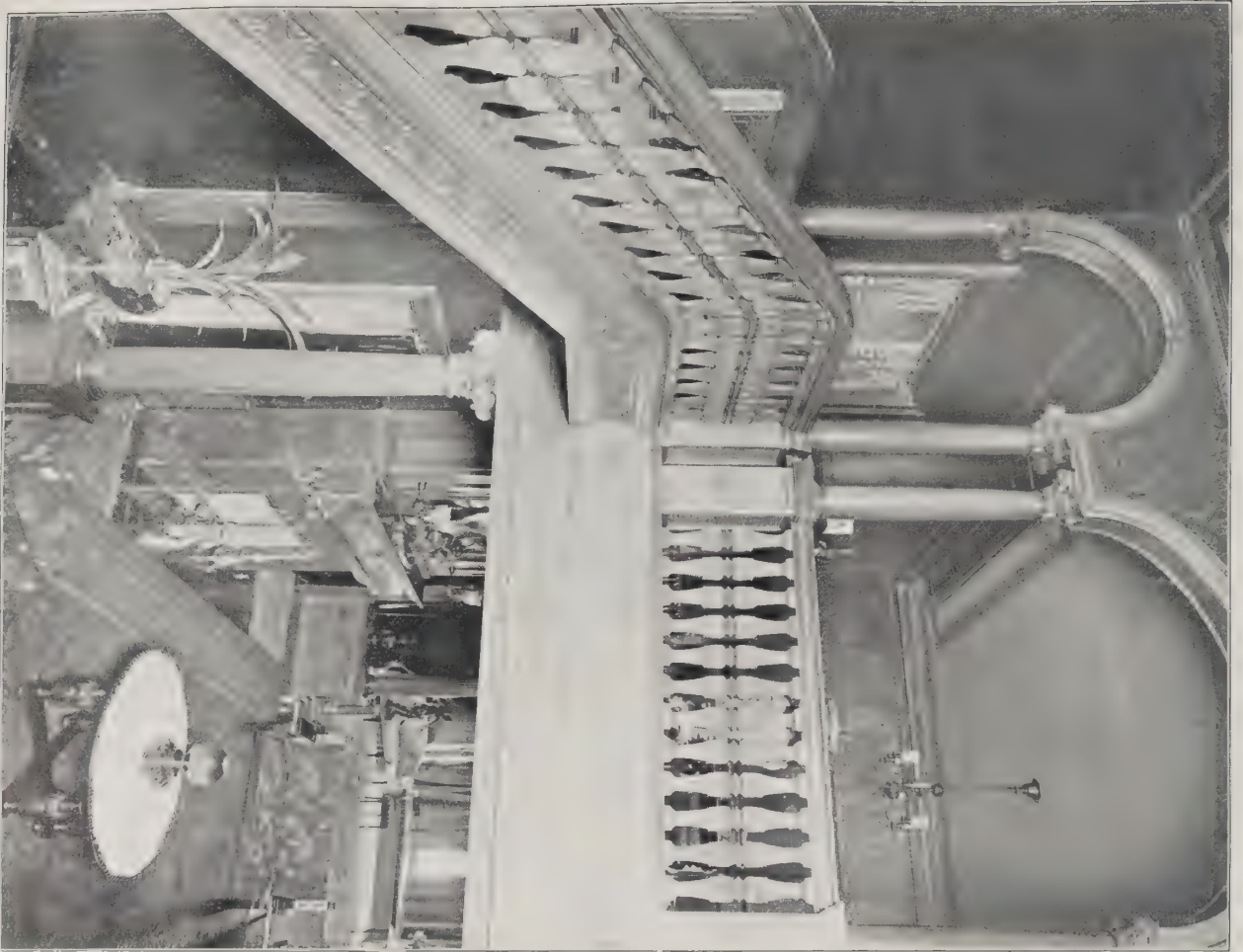
PLANS, HOUSE AT NEW CASTLE, PA.
RUTAN & RUSSELL, ARCHITECTS.

FIRST FLOOR.

INTO
PUBLI
ALIAN



MARQUISE DE LA ROCHELLE, OLD WILMINGTON MANSION PHILADELPHIA, PA.
KENNEDY & KELSEY ARCHITECTS.



MAIN STAIRCASE.



HALL.

HOUSE AT 100 MA TIB. TA
RUTS



UNION RAILWAY STATION, DAYTON, OHIO.
ELZNER & ANDERSON, ARCHITECTS.



HOUSE AT NEW CASTLE, PA.
RUTAN & RUSSELL, ARCHITECTS.



LIBRARY.



DINING ROOM.

HOUSE AT NEW CASTLE, PA.
RUTAN & RUSSELL, ARCHITECTS.



THE BRICKBUILDER,
NOVEMBER,
1900.



THE HILL OF POSILIPO, NEAR NAPLES, ITALY.



THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

THE Thirty-fourth Annual Convention of the American Institute of Architects is to be held in Washington, D. C., Dec. 12, 13, 14, and 15. It is doubtful whether one American citizen in a thousand is aware of the fact that by December 12 it will be exactly one hundred years since the city of Washington was occupied as the seat of government, and the public festivities connected with the celebration of this anniversary will constitute an introduction to the convention. A very attractive program has been laid out. Among many others, two especially fertile themes for discussion are to be introduced. Mr. R. Clipston Sturgis is to present a report as chairman of a committee of conference with the Architectural League of America on "Competition, Codes, and Cooperation." The relative positions of the Institute and League have been discussed and closely considered during the past year, especially so at the enthusiastic meeting of the Architectural League of America, which was held in Chicago in June. It is very easy to misconceive the functions of either association, and the ardor which is so desirable a factor in all forms of organized endeavor can easily overestimate both the good and the undesirable qualities which go to make the total efficiency of such bodies as these. The Architectural League represents a distinctive phase of American architectural development. As such it is to be encouraged

in every way, and is deserving of the support and sympathy of all who are interested in the growth of an honest, intelligent, and growing architecture. On the other hand, the Institute represents the conservative force, which is quite as essential as enthusiasm; it represents the restraining influence, without which zeal comes to naught, and it must always be remembered that without the long weary years of seemingly fruitless attempts that have marked the past of the Institute, such an organization as the Architectural League of America would not have been possible. We cannot personally feel that there is the slightest interference of field, or lack of most hearty cooperative sympathy between these two bodies, and the forthcoming discussion at the convention ought to be able to present the facts in such light that the two can be mutually benefited thereby. We need both elements. The American Institute cannot spare from its ranks the young men who have done such good work for the League. It is an honor for both to be associated. The results of the discussion, which Mr. Sturgis' report, we hope, will arouse, ought to be productive of lasting good to both the Institute and the junior society.

Another topic promises to be extremely interesting: "The Grouping of Government Buildings, Landscape, and Statuary in Washington," with an introduction by Mr. Joseph C. Hornblower of Washington, and papers by C. Howard Walker, Edgar V. Seeler, H. K. Bush-Brown, and Frederick Law Olmsted, Jr., followed by a discussion in which Wm. A. Boring, of New York, D. H. Burnham, of Chicago, Cass Gilbert, of New York, and Edward B. Green, of Buffalo, are expected to participate. This is an array of architectural talent which, when brought to bear upon a subject of this importance, is pretty sure to bring out many excellent ideas, and there certainly is abundant room for improvement in the present methods of grouping the buildings at Washington. This country is slowly, but, we trust, surely growing into an appreciation of the necessity for intelligent direction of its public buildings and highways, and in this connection we hope the Institute will see fit to take some action in regard to the proposed addition to the White House, which, if we may take the word of our contemporary journals, is being conceived in a manner calculated to greatly mar the beauty and effectiveness of the executive mansion.

THE various brick companies of New England are about to unite for the better management and control of the trade, and it seems a fit moment to urge the

advisability of a uniform standard of size for common brick. All older countries have seen the advisability of this, and have long ago established brick dimensions, which are closely adhered to throughout the country, but our brick-makers have merely a nominal size, which is in practice varied at will. The earliest brick made in this country followed the size then common in England, and when economy fixed on a slightly larger dimension, we did not fix a standard as England did, but allowed each firm to make such slight variations as it wished. The size was evidently regulated by the size and weight which a man could most readily handle all day long. The small brick of the eighteenth century were hardly a handful, and, consequently, were not economical, for the small size did not allow a man to lay a greater number in a day. The present dimension is about the extreme in size and weight which a man can handle quickly. The Dutch brick and the English brick are $4\frac{1}{2}$ by 9 ins. The Dutch is about $2\frac{1}{4}$ ins. in thickness, while the English is $2\frac{3}{4}$ ins. Our brick are supposed to be 4 by 8 ins., and vary from $2\frac{1}{4}$ to $2\frac{1}{2}$ ins. in thickness. The important proportion of header to stretcher is very carefully maintained everywhere but here; two headers and a joint equal one stretcher. Here hardly a common brick in the country can be found to answer this simple requirement. The pressed brick are naturally far more accurate, and, therefore, we find that common brick, neither bond nor course true with face brick. The objections to this looseness of dimension are twofold. From the builder's point of view, it makes it extremely difficult to lay any of the usual bonds with common brick, and yet present a workmanlike and sightly, with headers aligning accurately. Such bonds as the Flemish, or the English cross bond — that which is in general use in Holland — are quite impossible, as two headers and a joint must make a stretcher in this bond. The difference in size between common and face brick has led to various expedients more or less questionable for obtaining bond. Blind bond, now pretty generally discountenanced, was once common enough. Wire ties have been used largely as a complete substitute for bond. This latter may be constructionally quite as good as a brick bond; but certainly from the architect's point of view, the bond which frankly reveals itself on the outside, shows the good construction, and gives architect and bricklayer a chance to show variety in design and skill in execution is preferable to the wall composed entirely of stretchers, which, however strong, will always look like a 4-in. skin. It is almost needless to say what every right-minded designer or honest bricklayer ought to think of that whited sepulcher, so often seen to-day, — Flemish bond, composed of stretchers and batts. From the architect's point of view, it is not only the case as stated above, but there is also the annoyance of being unable to draw or figure accurately until he has ascertained the exact dimensions of the brick to be used. It would certainly be an advantage for the New England brick industry if they could now establish a uniform brick in true proportion. Such a brick, produced at the usual prices (or perhaps one may expect lower prices as the result of this trust), would certainly command the market here, and might perhaps be the pioneer in establishing a general uniform standard.

THE HILL OF POSILIPO, NEAR NAPLES, ITALY.

THE BRICKBUILDER presents this month as its frontispiece a view of the historic hill of Posilipo and the coast road leading to it from Naples. Few large cities are surrounded by such beautiful and storied scenery as is the picturesque metropolis of southern Italy. From the earliest times these shores have been the abode of seekers after repose and health as well as of humble toilers by land and sea, and the vine-clad slopes have sheltered palace and villa as well as hut and farm.

The hill of Posilipo, just west of and adjacent to the city proper, is a characteristic example of the country bordering on the Bay of Naples. Posilipo derives its name from Pausilypon (*sans-souci*), the villa of the notorious epicure, Vedius Pollio, afterwards the property of Augustus, which was gradually extended to the whole hill. It is covered with villages and charming vineyards, reached by long, sloping roads, from which late in the afternoon the most entrancing views are to be had of the magnificent bay with its islands, and the smoky cone of Vesuvius flanked by the more distant mountains of Sorrento. Popular tradition assigns a Roman columbarium in the vineyards above the old road as the tomb of Virgil. A satisfactory historical foundation is wanting to this assertion, but probabilities favor the assumption that this is, indeed, the poet's last resting-place. He himself informs us that he here composed the "Georgics" and the "Æneid," and he certainly possessed a villa on the Posilipo, and by his express wish was buried here after his death at Brundisium (*Brindisi*) in B. C. 19 on his return from Greece. Petrarch is said to have visited this spot accompanied by King Robert, and to have planted a laurel.

The *Strada Nuova di Posilipo*, shown in the illustration, starts from the Mergellina, at the west end of Naples, a locality that will be remembered as the abode of the fisher-folk, with whom Lamartine mentions dwelling in his story of "Graziella."

It at first skirts the coast, and then gradually ascends in windings around the southern slope of the hill, finally descending in the direction of Pozzuoli. On the left, jutting into the sea, are the picturesque seventeenth century ruins of the unfinished *Palazzo d' Donn' Anna*, also mentioned by Lamartine as one of his favorite resting-places. Farther up are the famous "Grottos" or tunnels, and just beyond the headland, shown in the engraving, are the scattered ruins of the villa of Vedius Pollio, extending to the sea and now overgrown with broom and myrtle. Nearer the town are the fish ponds where the cruel Vedius was in the habit of feeding large lampreys with flesh of his slaves. Here, also, is a small theater which belonged to a villa of Lucullus, and a temple where mariners sacrificed after a prosperous voyage. The entire landscape with its myrtles, olives, and stone pines seems saturated with the spirit of classical mythology and romance; and from the long upper stretches of the road looking down over the villas and gardens to the broad expanse of the bay, little imagination is needed to people it with the fleets of Roman triremes from near-by Misenum and the pleasure galleys of the luxurious magnates who dwelt upon its curving shores.

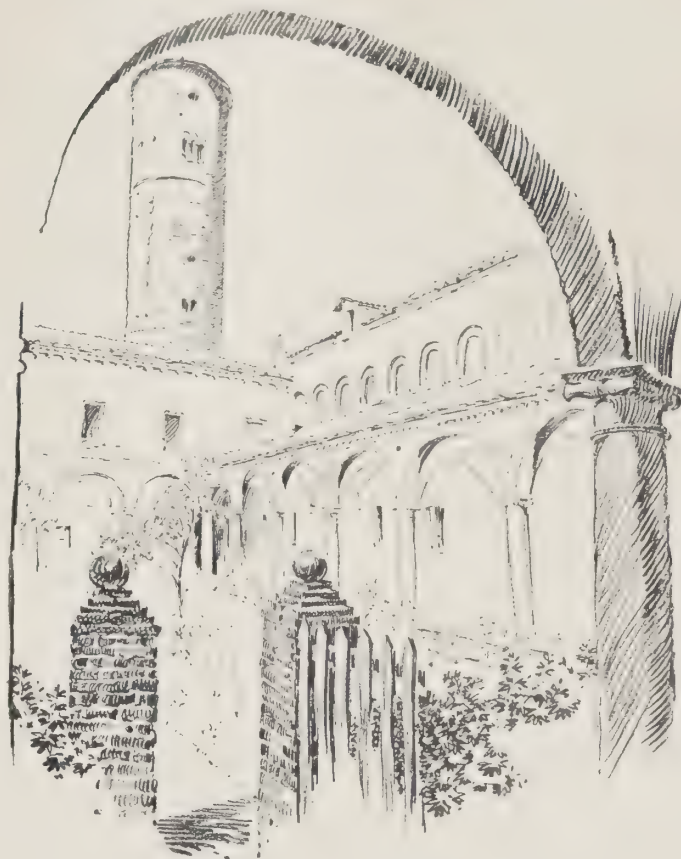
Byzantine Brickbuilding. I.

BY H. B. PENNELL.

THE term "Byzantine" is rightly applied to the style of architecture in vogue in Byzantium, the modern Constantinople, early in the Christian era. But to suppose it originated in or was confined to Constantine's new capital is to deny the process of evolution, which is as apparent in architectural as in physical growth. It was the product of environment and circumstance. Springing up in the city that was for a while to take Rome's place as the seat of the world's wealth and power, it was influenced by the classic traditions of Greece and Rome; while all the art of the Orient—Syria, Persia, even India—was brought to enrich and beautify it. For Byzantium was on the thoroughfare of commerce, and merchants, as well as artists and artisans, of both East and West flocked to the growing metropolis. Through this same channel of commerce Oriental art had already travelled to Ravenna, when under Justinian it became the residence of the Byzantine governor of Italy, and where we find some of the best examples of Byzantine architecture and decoration. Thence this potent influence spread to Venice and northern Italy, and even to southern France. To Sicily, also, it was carried from Constantinople by way of the Mediterranean. It is the official style in Russia and Turkey to-day.

It is by no means a difficult matter, then, to analyze the Byzantine style and trace it to its origins. The use

Rome the dome was familiar as a feature of the Pantheon and the Baths of Caracalla. Roman, likewise, was the use of marble and mosaics in the treatment of the wall spaces



CLOISTER OF ST. APPOLLINARE, NUOVO, RAVENNA.

Sketch by H. B. Pennell.



CLOISTER OF ST. APPOLLINARE, NUOVO, RAVENNA.

and development of the dome is, of course, its chief characteristic. We find its precedent in Asia Minor and Syria, where, as is evident in the ruins of Palmyra and Baalbec, the tendency for some time had been to substitute curves for straight lines, and arcades for lentils. In

and pavements. To the East, again, is due the fondness for brilliant coloring and for ornamenting broad surfaces with "all-over" patterns. It must not be supposed, however, that Byzantine architects were mere copyists. On the contrary, their adaptive power and perseverance in working out their own problems of construction made their art so unique as to be almost original. If they adopted the vaulting methods and materials of their Asiatic contemporaries, or if they received from Rome a suggestion for the foundation of their constructive principles,—that of using isolated supports to receive the weight, and internal buttresses to resist the thrust of their vaults and domes,—it was simply that they might accomplish the perfection of the dome on pendentives over a square plan, which was their chief triumph. The Pantheon is round; many Syrian buildings of the sixth century are polygonal; in the cathedral at Bozrah and the small church of St. George at Ezra there are attempts at pendentive construction. It is in Byzantine churches that we first find a successful application of the dome to square or cruciform plans having piers and columns, or aisles,—the Byzantine's nearest approach to the traditional basilical form especially suited to the usages of Christian worship.

With this brief review of the origin of Byzantine architecture we can study its growth; its constructive and decorative methods in general, and in detail, as applied in some familiar extant monuments; and its culmination in Justinian's masterpiece, the church of Santa Sophia in Constantinople, the type *par excellence* of the Byzantine style.

Following the precedent of both Syrian and Roman builders, the Byzantines adopted brick as their chief material, it being peculiarly adapted to the molding of vaults and domes. Not only in Constantinople, but generally in the East, bricks were used profusely. In fact, Texier says that even in countries where stone is plentiful, architects seem to have preferred bricks to all other materials. The church of St. Nicholas at Myra, in Lycia, is built almost entirely of bricks. Fine building stone was not quarried nearer to Constantinople than in the islands of the Greek archipelago, where to-day the Turks obtain a large part of the materials for their public buildings and residences at Pera. In the early days of the rapid renovation of Byzantium, the transportation of stone in large quantities from such a distance involved great expense and the loss of much valuable time. On the other hand, good brick material was easily available; the shores of the Golden Horn still furnish excellent clayey soil for the manufacture of bricks. These were made after the Roman pattern, but more carefully, and were larger and better burnt. An especially firm mortar containing particles of broken tiles was used, and laid in joints scarcely less thick than the bricks themselves. Professor Atchison in his lecture on "Byzantine Construction" (*Architectural Record*, June 30, 1893), says: "This mortar is called by Vitruvius *opus signinum*, and

of many stone structures. The use of cut stone in vaults, however, is not uncommon, and piers destined to bear especially heavy weights were often made of stone and strengthened by wooden ties clamped with iron. A



ST. VITALE, RAVENNA.
Sketch by H. B. Pennell.



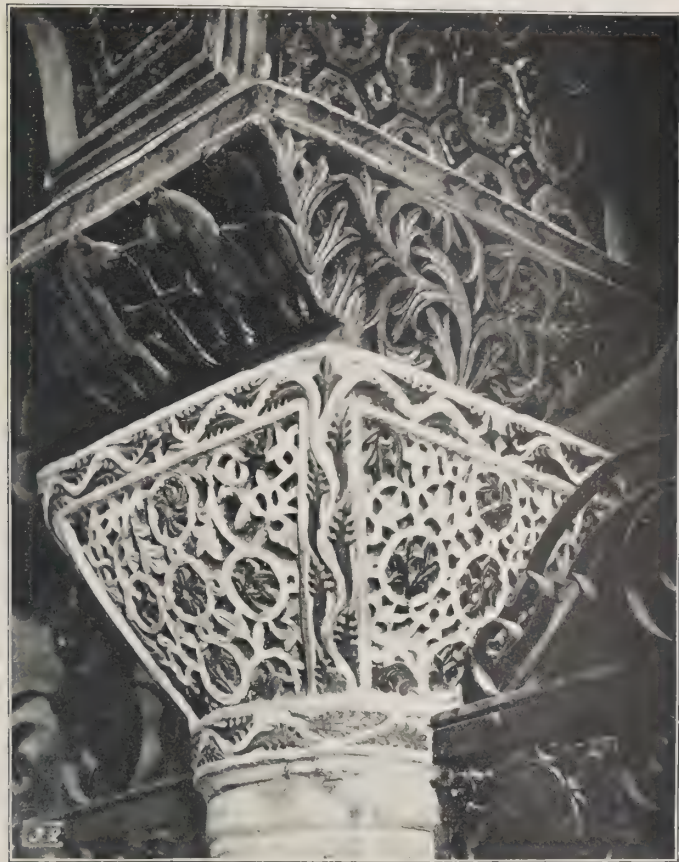
ST. VITALE, RAVENNA.

was used as a hydraulic cement, and partly as a material to resist heat. It is still used throughout Macedonia, and is now called "Khorassan" work. The Byzantines preferred their lime made from marble, but used limestone when marble was difficult to get or too expensive to use." Whereas the Romans used rubble faced with brick, ashlar, or freestone, the Byzantines, as a rule, preferred brick throughout in their walls and piers, and for the vaulting

familiar feature of Byzantine exteriors is the alternation of courses of brick and stone, notably in Santa Sophia. Otherwise, the exteriors are rather unsightly, being devoid of even the gracious light and shade afforded by external buttresses, and are scarcely a fitting case for the wealth and splendor which they enclose.

Upon their interiors the Byzantines spared no expense or labor. They were marvels of color and design, and almost baffle description. Panels of rare marbles, cut in slabs and set so as to repeat or reverse the course of the veins and form symmetrical patterns, veneered the walls. The domes and vaults above their springing were covered with fresco, or, more frequently, with many-tinted mosaics on gold, blue, or green backgrounds of exquisite hue, which continually remind us that the Orientals are greater colorists than we. Biblical scenes and characters were represented. The colossal saints and allegorical personages here and there betray the unaccustomed hand; for the skill to draw the human form was long uncultivated, through the intolerance in the Christian church of anything suggestive of pagan gods. The stone soffits of the arches, the archivolts, and spandrels are relieved of all appearance of heaviness by the delicate tracery of incised acanthus, or conventional forms. The capitals, whose inverted pyramidal outlines and massive proportions were well calculated to bear the weight resting on them, suggest rarely, if at all, the classic orders, but show Syrian influence in their minute carving; and rudely drawn birds or animals, and the cross and monograms, are frequent motives of their decoration. The

columns themselves were highly polished monoliths of marble, often brought over the seas from some demolished pagan temple in Rome. No attempt was made to follow classic traditions in the moldings, which, instead, were mere horizontal bands, or, when they marked the



CAPITAL FROM ST. VITALE, RAVENNA.

separate stories, cornices of richly carved marble. The pavements were of marble in designs formed of single pieces of color, or of small geometrical figures carefully fitted together.

In all this the architects of the New Empire profited from the work in Syria, or the monuments still preserved to them in Rome. In one important particular their art is a distinct departure from the Roman, and this serves as the line of separation between the two. It was in the matter of the construction of vaults. In Rome, light wooden ribs or centers were first built, and these were enclosed in a network of brick filled in with rubble in horizontal beds; the whole was then incrustated with concrete. The vault was thus practically monolithic and exerted no thrust. The Byzantines, on the other hand, after the manner of the ancient Assyrian drain-builders aimed to so dispose their materials that they could build up their vaults without centerings, practically "in the air," as M. Choisy remarks. This was, of course, not achieved all at once, but was a development which we can trace, though somewhat haltingly, through the continual experiments of the centuries.

The distinct Roman method is apparent in the great dome of the Pantheon, built in Hadrian's time. The basilica of Maxentius, vaulted by Constantine, and the Baths of Diocletian show a similar method, but are the last in Italy. At Spalato, in Dalmatia, Diocletian's palace approaches somewhat nearer the Byzantine style. The vault was built on rows of arches superimposed, the

spandrels of one row serving to support the springing of the next higher. In the two latter buildings we find the first indications of other Byzantine characteristics in the full-centered arch with the entablature carried round as an archivolt instead of a pediment, and heavy moldings. After the fourth century we find few examples of the thick monolithic Roman vault.

The parting of the ways between ancient and modern Roman construction came early in the fifth century, when Bishop Néon introduced from the far East the vault of such extreme lightness as to be scarcely more than a form to receive the rich garment of mosaics. At the same time, circular and polygonal plans, already in favor in Syria and used especially in baptisteries like that of St. John at Ravenna, were generally reproduced both in Constantinople and Italy. Henceforth, the problem was emphatically how to erect a hemispherical dome over other than a circular plan. The earliest solution was to cut off the corners of a square and corbel out the pendentives; but an octagon was found to be an awkward base. Squinches were used on squares, or conches, as in St. Nicodemus and Daphne at Athens. In the West the Renaissance architects at Sta. Fosca, Parma, and Piacenza resorted to the same device. Justinian covered his octagonal church of St. Sergius and Bacchus at Constantinople by a circular dome with flutes whose points act as ribs, while the rounding parts of the flutes coincide with the angles of the walls. A similar experiment had been tried more than two hundred years earlier in the octagonal hall of the Baths of Diocletian.

These various expedients were merely stepping-stones on the highway to the greatest Byzantine achievement, that of using true pendentives to fill the triangular spaces between the arches on the four sides of a square, and erecting the dome on the circular base thus formed. We find a primitive example of this solution of the problem in the little brick Tomb of Galla Placidia, in Ravenna,



LA PETITE METROPOLE, ATHENS.

built in the middle of the fifth century. It has the form of a Greek cross, with barrel vaults over the four arms and a spherical dome on pendentives over the crossing. An irregularity occurs here, however, in that the dome does not spring directly from the top of the arches, and the pendentives do not show to good advantage. The walls are carried up several feet above the arches, and a

sort of clearstory window — if one may borrow the term — is pierced in each one. On the exterior the form of the dome does not appear, as it does in Oriental buildings, the tiled roof being, instead, a low pyramid in shape.

To Galla Placidia, also, is attributed the construction of the church of St. Aquilinus in Milan, having an octagonal dome of brick on an eight-sided plan. Besides affording us much interest as examples of early Byzantine



TOMB OF GALLA PLACIDIA, RAVENNA.

struction, these two buildings, together with the Baptistry at Ravenna, show an exterior decorative treatment that was later to distinguish the Lombard style. In the Tomb, blind arches ornament the exterior; in the Baptistry is found a system of double arches carried on corbels and wall-pilasters; and in St. Aquilinus there was a gallery of arches springing from isolated supports, such as are familiar to us now on the Cathedral at Piacenza, built nearly seven centuries later.

The interior of the Tomb, as is to be expected, presents a pleasing contrast to the monotony of the exterior. One must imagine the bare brick walls once lined with marble to the springing of the arches; the mosaics on a background of deep blue, representing figures, birds, and animals on the flat walls, and conventional patterns on the vaults; the borders of flowers and fruit in red and green and gold outlining the soffits and archivolts; the dome of blue, starred with gold, and the gold symbols of the four evangelists on the pendentives; — these all make an ensemble of pleasing harmony. A rather more ambitious scheme of decoration is carried out in the dome of the Baptistry, where around a medallion, picturing the baptism of Christ, stand the twelve apostles in white tunics and mantles of gold. Their proportions scarcely follow the "canon of Polyclitus," but there is at least a commendable attempt at individualization in their countenances, and no little movement in their figures.

The dome is supported by two rows of arcades, whose columns and capitals are so varied and ill-assorted as to warrant the conclusion that they were appropriated from pagan temples.

The Baptistry is connected with San Vitale, and also with the chapel of St. Satyrus in Milan, by the peculiar construction of its dome. In each case the dome is built up of two layers of hollow pots of terra-cotta, the pointed end of one being inserted into the larger end of another,

carried round spirally from the top of the pendentives to the summit of the dome. The domes are thus very strong, but light and without thrust. This method is still practised in the East, varied occasionally by laying the pots as *voussoirs*.

Of the church of San Vitale, M. Taine ("Voyage en Italie," p. 221 *et seq.*) says: "It was built under Justinian, and to-day, although marred on the exterior and miserably repainted within, torn down in some parts, and in others built up with inharmonious additions, it is still the most Byzantine of all the churches in the West. It has a peculiar construction, and represents a new type of architecture as far removed from Greek ideas as from Gothic. The edifice is a rotunda surmounted by a cupola through which light is admitted. Around the outside runs a circular gallery in two stories, composed of seven smaller half-domes, and the eighth, being more spacious, is an apse which contains the altar. . . . To support the dome, eight huge polygonal pillars joined by round arches form a circle, and columns in pairs fill the spaces between. The effect is strange, and the eye, accustomed to following a succession of columns, is astonished here by the interruptions, by the fantastic variety of outlines, by the straight lines cut by the curve



INTERIOR OF TOMB OF GALLA PLACIDIA, RAVENNA.

of the vaults. . . . The capitals of the piers and columns are covered with clumsy flowers and a coarse network; . . . the elegant Corinthian capital is deformed . . . till it is merely a complication of barbarous designs." The mosaics are familiar to every one; the Empress Theodora and her ladies bearing offerings are ranged on one side of the apse, and the Emperor Justinian with his warriors and priests on the other. These are considered the richest of all the Byzantine mosaics, resplendent as they are with gold and precious stones.

The "Village Bank" Series. II.

BY LOUIS MULLGARDT.

IT is comparatively recent that banking institutions have been looked upon by the populace at large as a matter of primary necessity in every well-established community. Every hamlet or village containing a modest population, numbering from three to five thousand souls or over, has its peculiar requirements and characteristics, which are the natural offspring of its social and industrial life.

The familiar village has its churches of various denominations, also its schoolhouses, town hall, library, museum, theater, or music hall, aside from a variety of business houses and residences. Sometimes a village is endowed with some special industry peculiarly its own, and of sufficient magnitude or importance to the world to characterize the locality.

mercantile center of that territory. In such instances, the village occupies the important and undisputed position of mart to that industrial section; it is the port of commerce in which the townspeople are chiefly engaged in providing economical means of exportation of the local product, and importing the commodities which constitute the natural demand of every well-regulated community.

The result is, that we generally find in any single section or territory of commercial activity three distinct classifications of co-workers, consisting of the employers, who, by virtue of their position in life, properly officiate in the capacity of owners and financiers, sharing and distributing the direct financial returns resulting from their industries; secondly, we find the industrial class, who represent the intellectual and physical force required to execute any marketable commodity. The third class is represented by the merchants and general business men, who are the immediate officers and agents conducting



A VILLAGE BANK.

Then, again, other villages are surrounded by large territories of industrial fields producing coal or fine ore; otherwise, farm-lands producing fruits or cereals. The industrial surroundings or local conditions are the direct source from which any village is likely to receive its greatest endowments from a standpoint of riches.

There is another class of village which is not endowed with industrial life, nor stimulated into activity by the inspiration produced by surrounding fields of nature's own products; such villages do not, as a rule, find their way into the channels of commerce; they do not, strictly speaking, assume any of the characteristics of an industrial community, and may generally be classed as the home of the urbanite.

In certain sections of every civilized country or State where special industries prosper and flourish, we will, as a rule, find an exceptional activity prevailing in the village nearest adjoining, and properly forming the com-

mercial center of that territory. In such instances, the village occupies the important and undisputed position of mart to that industrial section; it is the port of commerce in which the townspeople are chiefly engaged in providing economical means of exportation of the local product, and importing the commodities which constitute the natural demand of every well-regulated community.

All surplus funds generally seek some form of more or less permanent investment, and all moneys not otherwise engaged usually find their way to the village depository, which, by the way, is intended to be the principal theme of my remarks.

The predominating industrial interests of various villages are likely to be considerably diversified in their nature; however the case may prove to be, the result will still present itself approximately identical, in the main, to the one related heretofore, and whatever the direct source of income to any one community may be, the practical result should properly remain the same.

In respect to the storing away of surplus funds and

valuable papers, the antiquated methods of concealing the same in the earth, or in old chests and strong boxes, are no longer as popular as they were some years ago; nor perhaps are featherbeds, stockings, and disused cast-iron stoves in as general use as one might infer from the sad newspaper accounts which are frequently published.

A bank is now regarded as essential in every thriving, prosperous community, and is quite as important an institution, in its way, as the church, schoolhouse, city hall, or public library.

A bank is the most convenient institution for conducting important financial affairs; also, for the safe-keeping of funds and valuable papers; for all of which it is highly essential that the vaults, likewise the moral character of the bank officials, be as strong and reliable as possible. It is at times, perhaps, to be regretted that the latter cannot be included in the architect's plans and specifications.

The accompanying drawings are intended to illustrate the general requirements of a village bank. The general banking room is intended for conducting all banking affairs of a more or less public or general nature. The same should be provided with a tile or mosaic floor, and wainscoted with a similar material to a reasonable height, so that the room may be easily kept clean. The room should be provided with public seats and writing desks; the furniture and fittings should be so arranged as to meet any special requirements of the management, or as some special exigency peculiarly adapted to the locality may dictate. Conveniently located to the public banking room, should be the consultation room, where such private business and other matters requiring the special consideration of the officers in charge may take place. The directors' room, immediately back of the consultation room, is ordinarily used by the president as his private office, but is primarily intended for the convenience of holding board meetings. This room should be conveniently accessible from the general banking room; it may sometimes be found desirable to separate this room from all other apartments by glass partitions only, admitting of ready surveillance of all other departments.

The vault may properly be considered the most important part of the institution, since it is impossible to conduct a banking business with reasonable safety and economy without an efficient stronghold as a depository of valuables. These vaults are usually constructed

of heavy masonry, surrounding a shell lining of steel. The most modern vault, however, is constructed of armor steel plates, such as are used on our war vessels, including the top and bottom, and have all corners dovetailed together. The vault door is made proportionately strong and secure, and supported on adjustable anti-friction hangers, and provided with an approved time-locking device. The interior should be arranged into steel subdivisions especially designed for keeping the banking books, records, moneys, valuable papers, and sometimes jewelry.

The entire banking room should be flooded with a soft light penetrating the building through a skylight panel properly set and supported by cross-beam construction.

The windows of the banking room proper should serve chiefly as a means of ventilating and providing fresh breezes to the working department, and should not be required for the purpose of securing additional light.

Proper means must be provided for convenient access to the basement, both for the purpose of attending to the heating apparatus, and as a means of access to some storage departments which may properly be provided within the foundation walls.

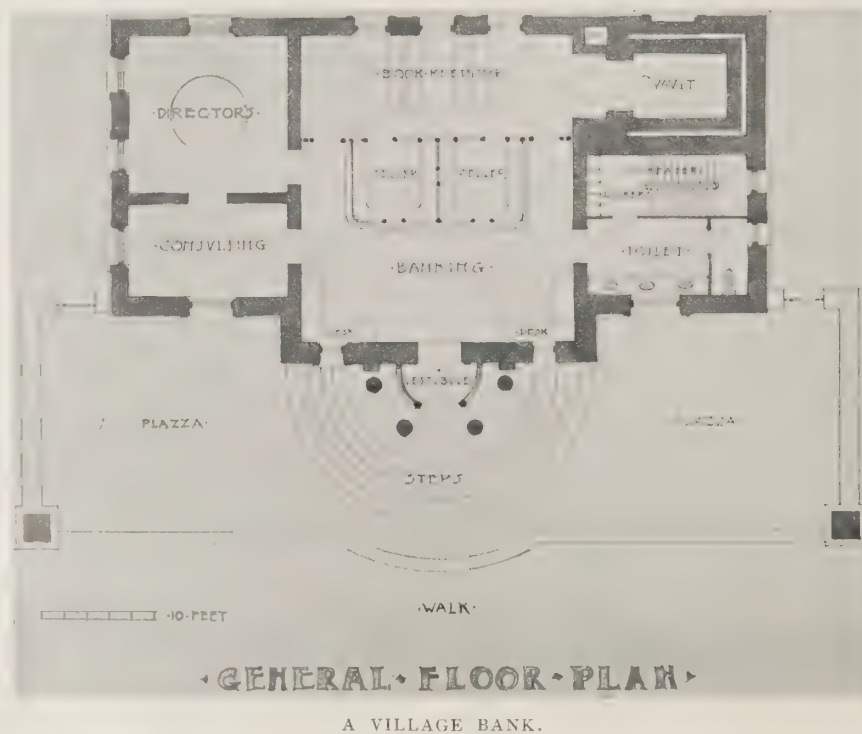
Provision should also be made for the clerks' coats and hats, by means of separate lockers conveniently situated to the toilet room; the latter may properly be so located as to serve for both public and private use.

It is quite essential that additional space should be provided for the filing away of old disused books and records; the space afforded by the foundation of the vault, properly lined, ventilated, and provided with metal doors, will readily fulfil this requirement.

A certain portion of the basement should also be set aside as a store room for the safe-keeping of silverware and other valuable articles, which may be conveniently stored there during temporary absence of any of the townspeople.

The entire building should properly be of fire-proof construction, and contain a modern combination heating and ventilating apparatus.

Referring again to the banking room proper, the general arrangement of the teller's and clerks' department is largely a matter of individual preference, since local conditions and personal requirement on the part of the management must govern these points.



The "Village Inn" Series.¹ I.

BY WILLIAM A. BATES.

ABOUT twenty miles from Philadelphia there is a small, attractive town, which, during the past few years, has attained a remarkable growth, not only in a substantial way, but with a decided tendency towards the æsthetic as well, all of which reflects great credit upon the men of temerity who have founded their pretty homes for their families, which are easily accessible from the city, and which have the well-known suburban advantages of abundant air, shade trees, extensive lawns, and healthy surroundings. A feature of the town, not least in attractiveness, is the public square, which, although architecturally heterogeneous, is still very quaint and

effective, more from the point of view of the artist, perhaps, than from that of the architect.

The square is not square exactly (and is, I think, more picturesque on that account), and has surrounding it on three sides a group of buildings consisting of some shops, a modern town hall, decidedly Parisian in style, a parish church in English Perpendicular Gothic, and a very dignified old mansion of the Jeffersonian period. On the opposite side of the square, from the church and town hall, is a piece of property with a frontage of 300 ft. on the square, and extending back in an irregular shape some 800 ft. to the river. Now this property has been for many years used as farm land by the owner, a gentleman of English birth, whose parents acquired it for a mere trifle, and who lived in the old mansion on the square. With the lapse of time and the growth of the



A VILLAGE INN.

¹ PROGRAM.

The problem is a village inn to be located in a section of beautiful country some twenty miles out of Philadelphia. This inn is supposed to be for the accommodation of coaching and sleighing parties, bicyclists, and the best class of pleasure-seekers generally, and of a limited number of permanent guests, who will use it as a kind of summer resort. The lot of land faces on a village square with a frontage of 300 ft., and reaches back in a rather steep slope to a small river available for boating and fishing. The land is supposed to have been formerly an ancient estate, and contains many large trees, an orchard, and shrubbery. The view across the river is supposed to be particularly attractive. The square is surrounded by various buildings,—a modern town hall, decidedly Parisian in style, a parish church in English Perpendicular Gothic, an old mansion of the Jeffersonian period, and two blocks of low shops.

In architectural style the inn should do its best to harmonize with its somewhat heterogeneous surroundings, the material to be of brick and terra-cotta. The accommodations of the inn should be dependent on the purposes for which it is intended, entire liberty being left in the matter of size and nature of the rooms. The scheme should also involve the necessary stables and the accessory buildings.

town, this piece of land has become valuable, and the owner, being a man of much common sense, has consulted with his architect as to ways and means for improving it and making it a source of revenue instead of sowing it with gold in taxes and reaping nothing; and the architect's views and ideas are set forth herewith in the form of plans and sketches, bearing in mind, of course, that the owner is a man of rare discretion, and whatever merit there may be in the scheme is due largely to his shrewd criticism and suggestions.

The conclusion was reached without much delay that a typical "Village Inn" would be the right thing in the right place, as the town has no hotel and but few boarding houses, and its nearness to the city together with the good macadam roads make it a popular Mecca for coaching and automobile parties, bicyclists, sleighing parties in winter, and the best class of pleasure-seekers generally, while a good place for permanent guests would surely prove remunerative.

One of the owner's first and most urgent requests was that the building should follow the style of the English Renaissance, and he produced a photograph of a building in Huntingdonshire, with which he had become familiar in childhood, which he requested the architect to take as his motif. Fortunately, the style was not inappropriate, in fact, lends itself well in regard to plan to just such an

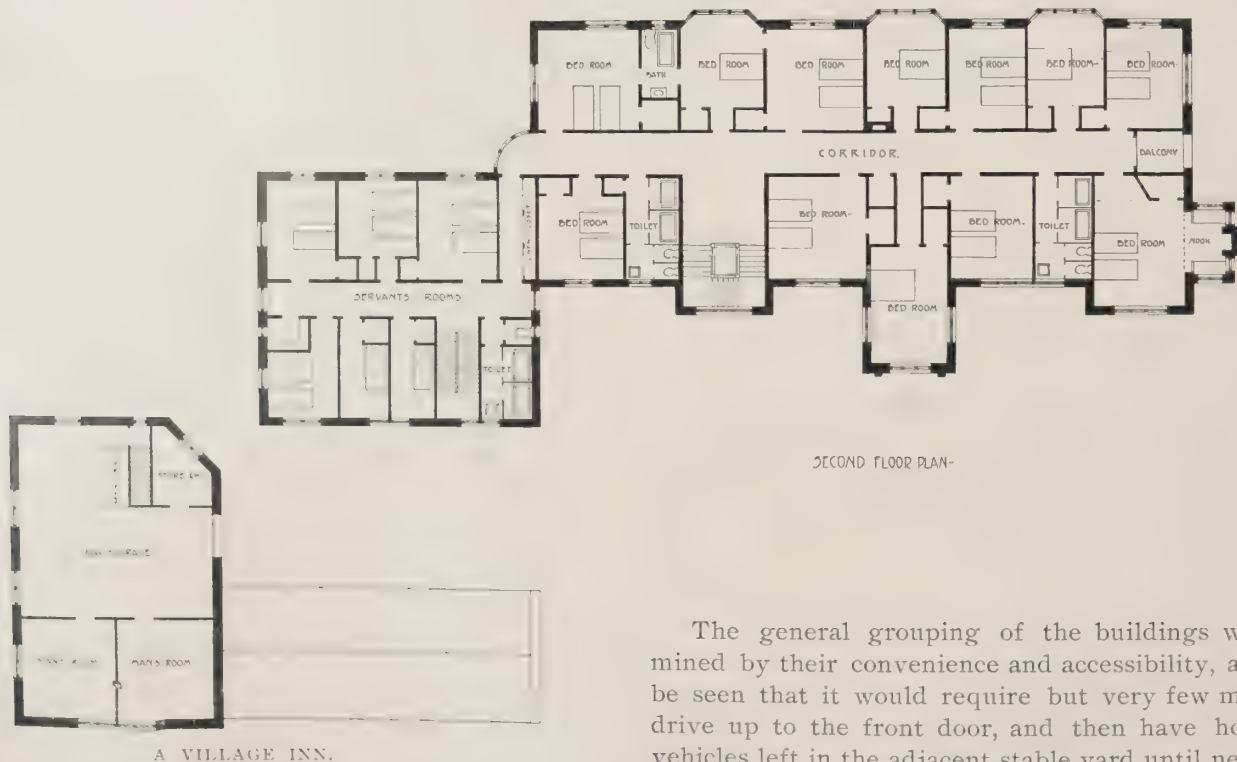


A VILLAGE INN.

prise; and another of his requests or conditions, more urgent indeed than the first, was that the building should be built of brick and terra-cotta, for he had had some experience in building transactions, and had wisely concluded that in every way these materials were all that could be desired, either from the standpoint of economy, durability, or effectiveness. In connection with the planning of the building, the architect was also requested to suggest a scheme for developing the grounds and making them as attractive as possible for the guests.

What attracted the architect to this estimable gentleman, more than his genial personality or any other

personal qualification, was the fact that he did not set any limit to the cost of the building, although he had pretty definite ideas as to the number and size of rooms required; and the architect, on his part, refused, with many a gnawing pang, the temptation — which no architect can be blamed for having — to affix to the building all the “architecture” which he knew or could trace. Therefore, together they evolved the building which is here illustrated, and which, although more pretentious perhaps than the average village inn, must be considered and criticized from the point of view of the Philadelphians who are to use it.



A VILLAGE INN.

The general grouping of the buildings was determined by their convenience and accessibility, and it will be seen that it would require but very few minutes to drive up to the front door, and then have horses and vehicles left in the adjacent stable yard until needed.

The main entrance is through a tiled porch which is on the axis of the street approaching the square, on the opposite corners of which stand the church and town hall before mentioned. The feature of the ground floor is the large hall with wainscot and paneled beam ceiling of black oak in Elizabethan style. At the left of the entrance, separated from the hall by an arch, is the office,



A VILLAGE INN.

beyond which the massive staircase with perforated oak balustrade is plainly seen. There are two entrances from the hall to the tiled terraces, one being for the exclusive use of ladies, and in direct connection with their parlor and coat room. Occupying the southwest corner is the pool room, which commands a fine view of the grounds and of the tennis-court. The opposite angle contains the dining room, which, facing the south and opening upon the uncovered terrace, would always be cheerful and attractive. The kitchen department is completely isolated, and the servants' bedrooms are directly over it so that in perspective it will be seen that the kitchen wing is somewhat detached and subordinated from the main building. There is a separate drive for the use of supplies to the kitchen, and the stable yard and main driveway are reserved exclusively for the use of guests. The upper floors contain twenty-four large well-lighted bed rooms for guests, with abundant closets, toilet facilities, etc.; in fact, it is the wish of the owner to spare no expense to make this building as comfortable and luxurious as possible.

“The Brickbuilder” Competition IV.

A CREMATORY.

CRITICISM AND AWARD BY JOHN W. CASE.

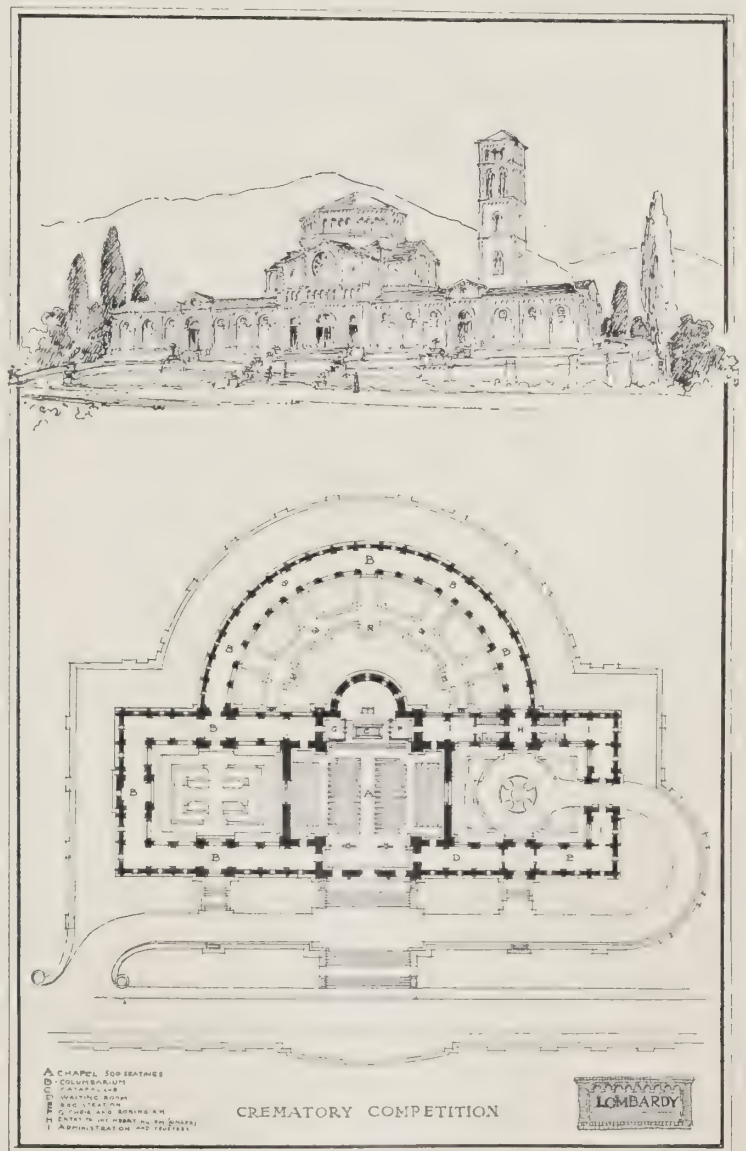
THE program for crematory competition does not seem to have appealed to designers, possibly because it is not a picturesque subject. The program is an academic one, classic in character, and possibly academic designers prefer to express themselves in plan and elevation rather than in perspective. Picturesque subjects are much more apt to be interesting in perspective than academic ones.

There is but one design, “Lombardy,” submitted in the crematory competition that is fit for publication, and that one has, in elevation, very much the character of a monastery.

In plan, however, it is unmistakably a crematory, as shown by the ambulatory arranged as a columbarium.

The plan is academic, and shows the good results of academic training; it is simple and direct, arranged on axes, with easy access and no cramped relations between the parts.

It is doubtful if the circling ambulatory adds any



FIRST PRIZE DESIGN.

Calvin Kiessling, Boston.

note of beauty to the design as seen in near perspective from the back, unless the ground falls away sufficiently to give an imposing height. It enriches and adds to the interest of the plan, which otherwise might be somewhat meager.

It seems as though this circling ambulatory should lead to something of importance, and there is a distinct feeling of disappointment after walking about this semicircle and not meeting with anything of especial interest, which, perhaps, one would expect to find opposite the center axis of the chapel.

The designer of "Lombardy" may, however, have considered the rear view of the chapel and apse, with the statuary in the court, to be of sufficient beauty to engross the entire attention, and wished to subdue the interest of the circling ambulatory to that of the apse.

The campanile is unfortunately placed in regard to its perspective relations with the chapel, as, indeed, most Italian campaniles are. The top story of the campanile is a misfit.

The arrangement of driveway by which the hearse enters the enclosed court, thus shutting out the general public, shows refinement and good planning. Otherwise, it might seem better, so far as perspective relations are concerned, to place the campanile and entrance to the incinerating precincts in the circling ambulatory on the axis of the chapel; for although it is not absolutely necessary, practically, that the chimney be in close connection with the incinerating process, yet the two are so closely connected in thought that they seem best closely connected in plan.

The chapel is well placed in the rectangular ambulatory, and has points of interest marked on its center axes, the lack of which is felt in the circling ambulatory.

The plan of "Lombardy" is symmetrical, academic, classic in character, while the elevation is picturesque not only in the arrangement of accessories, but also in the character of the style of architecture.

The plan of "Lombardy" is symmetrical, academic, classic in character, while the elevation is picturesque not only in the arrangement of accessories, but also in the character of the style of architecture.

The chapel is similar in plan to, and might have the breadth of effect and dignity of, Santa Maria delle Gracie at Milan.

The central octagon tower is not (nor are its historical

predecessors) very well accounted for in plan, although its pendentives shoulder an appearance in elevation. The eight (8) monotonously identical faces of the octagon tower might be varied by a roof treatment similar to the tower of the cathedral at Salamanca, Spain.

The treatment of the gable façade of the chapel is unfortunate, and the pilaster treatment unhappy, although the designer has

felt the necessity of breaking up this large flat wall surface and of relieving the heavy slope of the roof.

The arrangement of the waiting rooms, trustees, etc., has been neatly tucked into the plan, although it is evident that the practical requirements of the plan have been made entirely secondary to its monumental character.

The variation in the usage of the similar rectangles, one on each side of the chapel, adds interest to the plan, but is not indicated in elevation.

The small gables over the side entrances in front elevation are weak in interest.

In general, the character of the design expresses the usage of the building, and is of a monumental effect. The plan, undoubtedly, is superior to the elevation in character.

The design, marked "Norseman," is just the opposite in character to "Lombardy." It is a plain, matter-of-fact, every-day arrangement of the problem. It is as

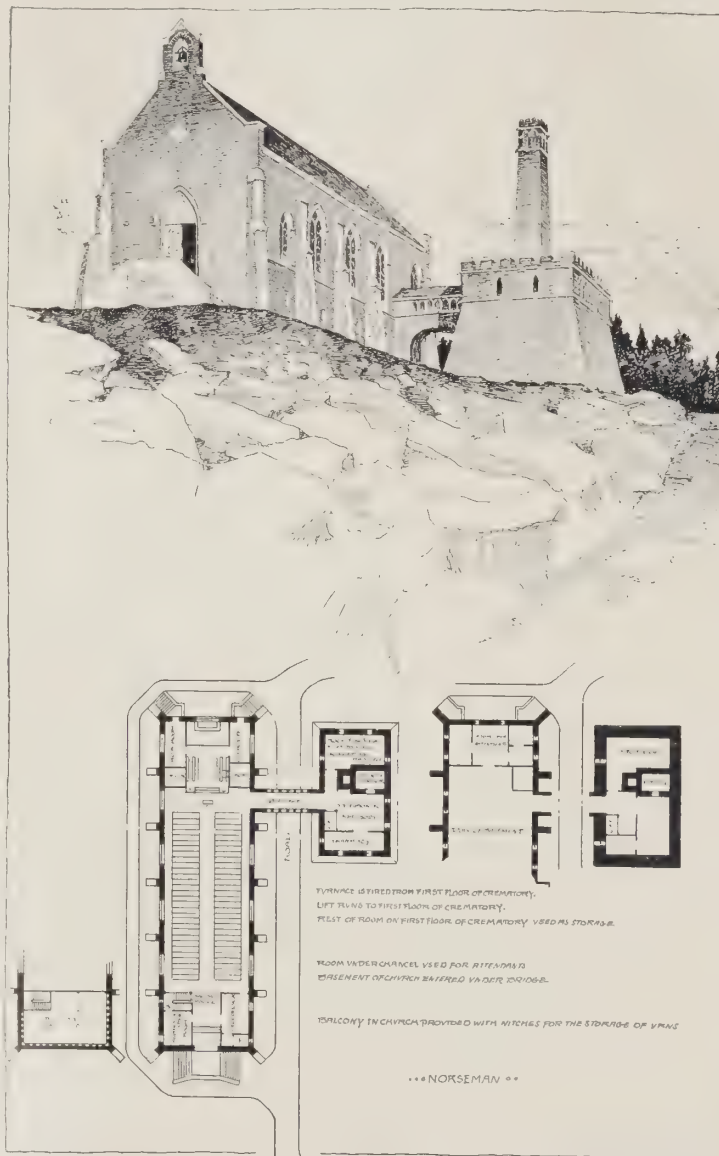
hard and angular as the rocky way which leads to its door. There is nothing here to relieve the grimness of death; in fact, its uncompromising character is accented.

The design lacks grace and beauty; it lacks poetry and imagination. The designer has felt this and tried to alleviate it by choosing a picturesque point of view for his perspective.

The chapel seems very long for its width, longer than the English cathedrals even.

The space in the balcony would be inadequate for the columbarium, the monumental character of which does not seem to have appealed to "Norseman."

The general scheme of "Omega" (Ω) is similar to "Lombardy," but not so well worked out. It fails principally because of a lack of life and feeling. The opportunity to gain richness of design and interest is lost by the



SECOND PRIZE DESIGN.

H. S. Head, Reading, Pa.

tiresome repetition of the same motive. Added interest and depth of thought would be gained by varying the detail and parts of similar masses. This fault is seen not only in the corner pavilions, but also in the towers.

It is not sufficient to get the general idea of a good scheme and then stop thinking, and repeat something without meaning over and over again. We must go farther; study how to vary the character of similar parts of the scheme, and try all promising arrangements of these parts.

The position of the chapel in regard to the rectangular columbarium is not well arranged. They have no definite relation. The columbarium might come at one half or one quarter the length of the chapel just as well as where it is placed, and from the chapel the entrance to the columbarium is not well marked.

If there were transepts on the chapel, the columbarium might well be brought to them, a fixed place from which to start.

The repetition of the two large towers shows lack of thought. Why are two large towers needed? If we must have a tower on the façade, why not place it on the center axis of the chapel. The designer of "Omega" seems to have felt the insignificance of the chapel in elevation, and tried to compensate for it by repeating the massive tower, and having enlarged the rectangular columbarium too far, the design seemed scattered; hence, must have two towers, a large mass, to compensate for the mistake.

"Omega" has been unfortunate all the way through for having chosen a bird's-eye perspective; the paucity of the plan is all the more clearly revealed. The angle that the perspective makes with the edge of the paper is very awkward, and the gigantic pines and black-robed cypress trees do not suffice to fill out the awkward space.

The levels of the different parts of the scheme are confused. The pharmacy and viewing rooms are badly placed in basement without sunlight.

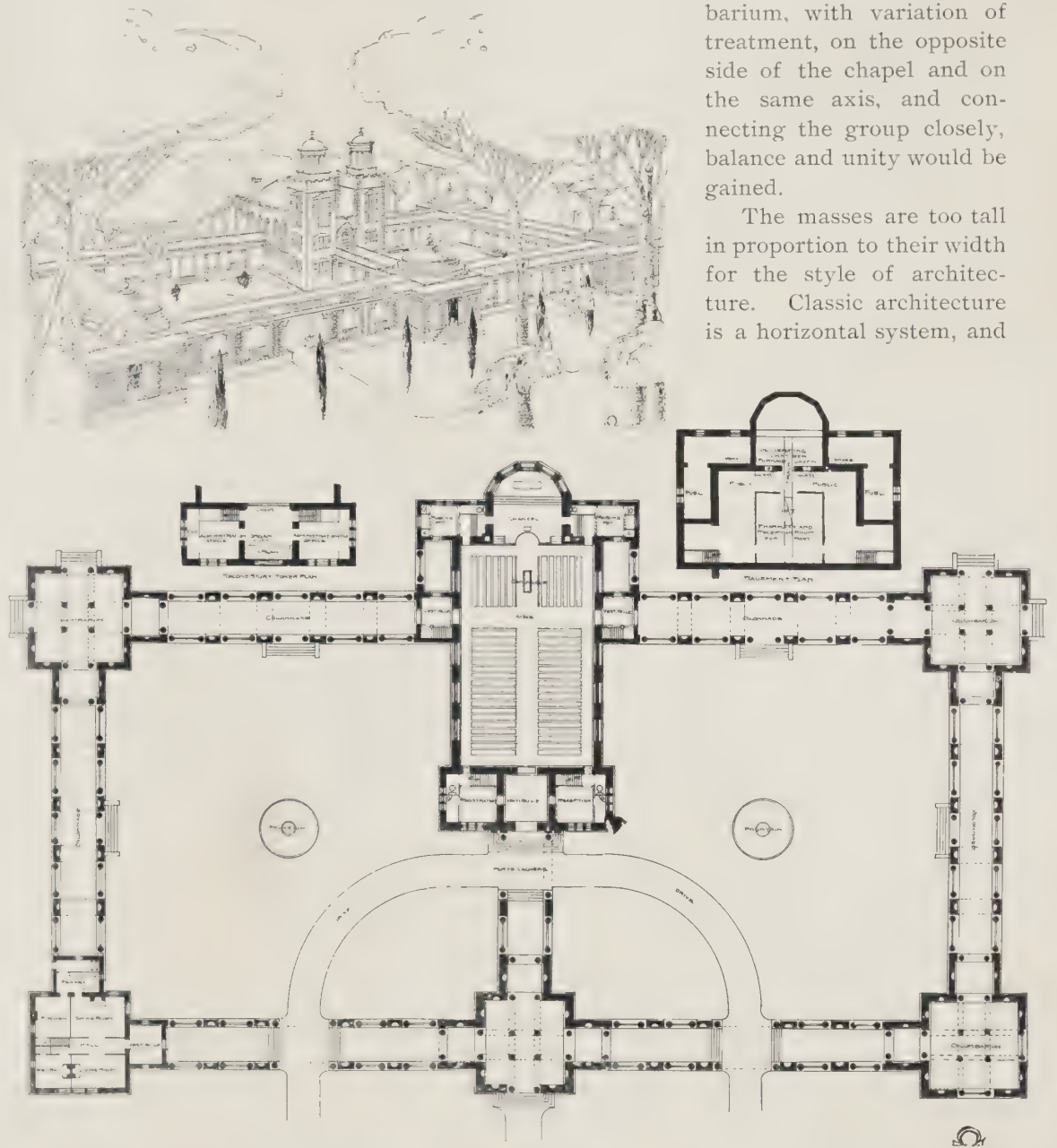
The administration offices are difficult of access. The keeper's rooms are well isolated. The designer has cor-

rectly felt that they should not be placed in the chapel building nor near the incinerating process.

The composition by "Bona Fide" lacks balance. The columbarium would not show from the opposite point of view. It is not sufficiently connected to the chapel. They do not seem to belong necessarily to the same composition; either could apparently do without the other.

By repeating a columbarium, with variation of treatment, on the opposite side of the chapel and on the same axis, and connecting the group closely, balance and unity would be gained.

The masses are too tall in proportion to their width for the style of architecture. Classic architecture is a horizontal system, and



THIRD PRIZE DESIGN.
John Stafford White, St. Louis, Mo.

the excessive height of the buildings in relation to their width makes the design uneasy. It lacks repose for this reason.

There is a struggle between the horizontal and vertical lines, and neither is supreme.

If the chimney must be so strictly utilitarian and lacking in interest, why not suppress it entirely and use a forced draught?

In plan, the wings are long for the central octagon; they straggle, and would interfere with the perspective of the dome.

Fire-proofing.

THE FIRE-PROOFING OF THE GOVERNMENT PRINTING OFFICE, AT WASHINGTON, D. C.

ABOUT February 1, there appeared in several of the technical journals an advertisement, soliciting proposals and designs for the construction of fire-proof floors and steel protection for the new Government Printing Office, at Washington, D. C., which afterwards developed into what was probably one of the most interesting competitions ever conducted in this country in relation to fire-proofing.

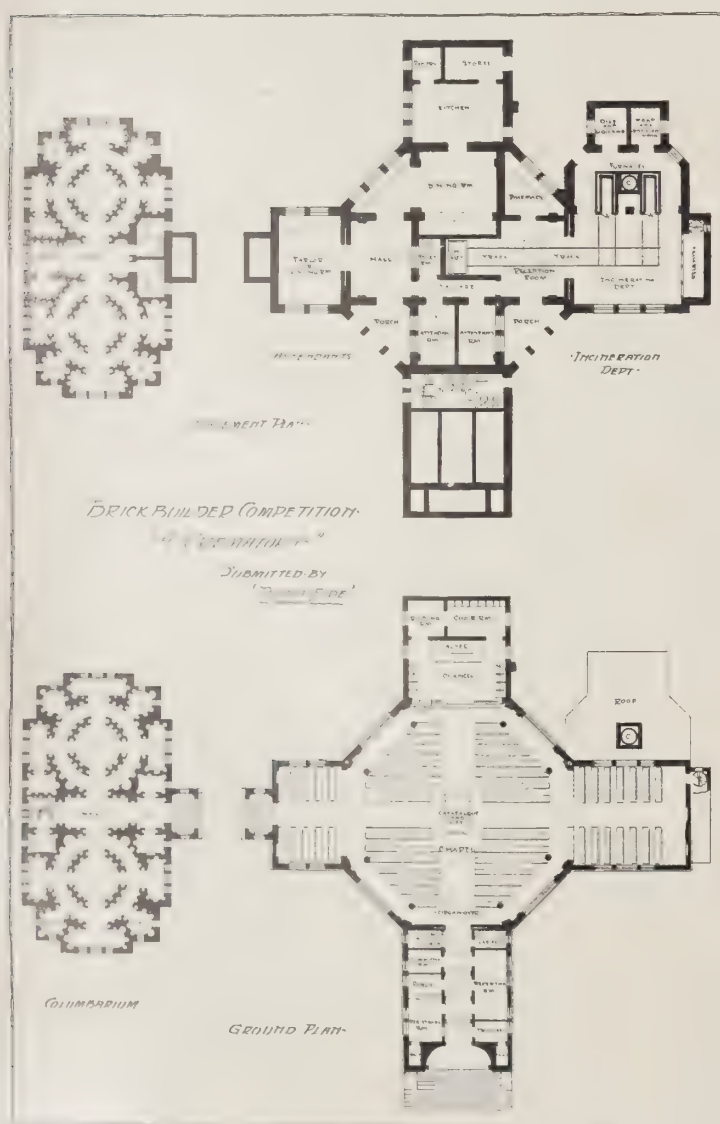
The construction of the building (an idea as to the size of which may be formed from the fact that the floors alone cover an area of 400,000 sq. ft. after allowing for openings, etc.) was placed under the supervision of the engineer of the United States Army, with John Stephen Sewell, First Lieutenant, Corps of Engineers, in direct charge.

The structural steel drawings were designed, showing series of deep girders running transversely through the building at an average distance of 12 ft. on centers, between which were shown floor beams spaced about 6½ ft. apart; but the specifications were such that the floor beams might be re-spaced to suit any particular construction, or they could be entirely omitted (with the exception of beams opposite columns), and a proposition submitted for a construction spanning from girder to girder, with the understanding that the price of all additional steel work, necessitated by any change from the drawings, was to be included in the submitted price for the floor construction.

The specifications required in general a construction to support safely a 400-lb. per sq. ft. superimposed load, and to withstand a drop test of 500 lbs., in the form of a barrel of sand of the above weight, falling from a height of 8 ft. in the clear, without showing any injury to the floor, and it was specifically stated that no concrete, composed of cinders, would be accepted. This, as can be seen, necessitated a construction somewhat out of the ordinary; but, nevertheless, there were in all ten proposals submitted, comprising both long and short spans in concrete and steel and terra-cotta construction.

The specifications for the girder and column covering were also far beyond the ordinary, since it was necessary in the case of the girders to attach electrical junction boxes, by means of bolts, to either the sides or bottoms of the covering; and since these boxes are liable to be moved any number of times, the covering would have to be of a nature to permit of drilling, until it was practically honeycombed, without showing any defects; and as to the column covering, this was required to withstand the same drilling as above, in the same manner. The test prescribed for the girder covering was 400 lbs. per lineal ft., hung on expansion bolts.

After all estimates and designs had been carefully examined by the engineer in charge, Lieut. John Stephen Sewell, it was announced that the proposition of the Fawcett Ventilated Fire-proof Building Company, Limited, of Philadelphia, had been accepted, and that their



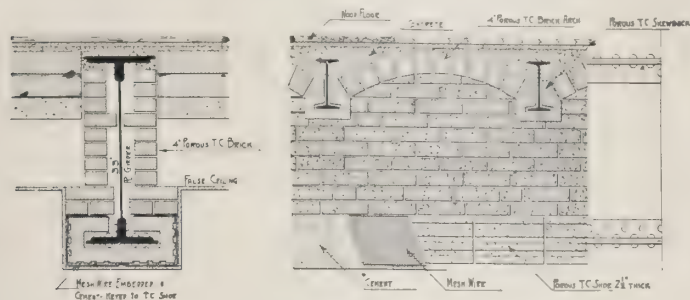
MENTION.

Willford A. Gagnon, Montreal, Can.

The catafalque is not well placed in the midst of the seating, as there would be a tendency of those seated in front of it to turn about.

The trustees' and reception rooms are well placed. The living rooms are too near the incinerating process, and would be better isolated.

proposition had been recommended for acceptance to the Chief of Engineers U. S. A., Gen. John M. Wilson, and had also been published in the *Engineering News*.



SKETCHES SHOWING FLOOR CONSTRUCTION AND METHOD OF FIRE-PROOFING GIRDERS AS DESIGNED BY THE U. S. GOVERNMENT.

Because of objections raised by some of the competitors, it was announced that all designs and estimates would be rejected, and that the Government would make their own designs and re-advertise for proposals.

In the second case, after going over the several designs submitted, which included all the prominent constructions, the chief engineer in charge designed a system of floor construction as well as steel protection, which were composed almost wholly of terra-cotta.

The specifications accompanying the designs of the Government stipulated that all materials must be of a highly porous nature, samples of which must accompany the proposals, and it was stated that special attention would be paid to the character of the material and the degree of heat at which it was burned, it being the purpose of the Government to procure as highly a refractory material as was possible, within the means prescribed.

After examining the proposals and samples submitted, it was announced that the Fawcett Ventilated Fire-proof Building Company, Limited, were again the successful bidders, and they eventually received the contract for the work.

We present, herewith, the designs submitted by the Fawcett Company, as well as those executed by the Government (which could not consistently use a patented construction), and upon which the second propositions were based.

The brick and skew-backs forming the floor arches are made with a porosity of about 40 per cent. from a buff clay, which burns at a temperature of about 3000 deg. Fahr., and when set form a floor which is as nearly proof against the passage of fire as it is possible to produce; the fact of the brick being made porous not only reduces their weight very considerably, but imparts to them the faculty of resisting the passage of heat for a much longer period than if they had been made of dense material, and, as has been proven by tests, will resist the

combined action of fire and water without any apparent deterioration.

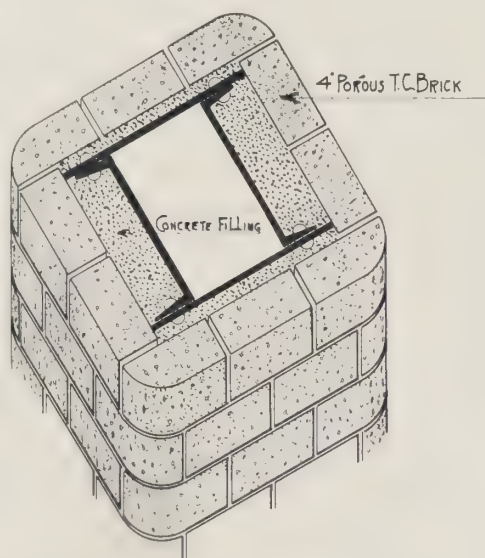
The covering of the girders is made of the same material; the shoes covering the flanges are $2\frac{1}{2}$ ins. in thickness, and of the same porosity as the brick; in addition, the sides and bottoms of said shoes are heavily grooved so as to allow the cement covering, which acts in conjunction with a mesh wire to form a key; after the shoes have been covered with the wire and the cement is set, they will permit of any number of holes being drilled in them (the material itself being very tough and fibrous), and will sustain a considerable weight with safety, the wire and cement securely holding the same together in the event of any tendency to spread or crack, which is hardly probable.

The same points, generally speaking, pertain to the column covering also; the brick, being of the same material and laid in $2\frac{1}{2}$ -in. courses, and after being backed up with rich Portland cement and concrete, will constitute what is probably one of the best pieces of column protection yet attempted, will carry great weight of itself, and can be honeycombed without seriously impairing its strength.

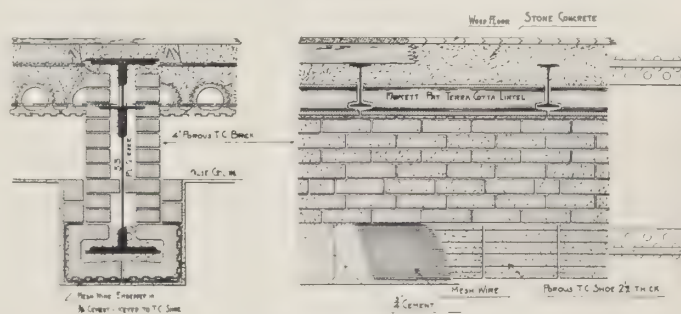
It will be seen from the two designs, shown herewith, that the construction of the column and girder covering is the same, and that the floor has been changed from the Fawcett (Patented) Construction to the one shown.

We feel it may be stated safely that when completed the Government Printing Office, at Washington, D. C., will be one of the most securely fire-proof buildings of its class in the country; and further, it cannot be contradicted that a terra-cotta construction, properly designed to suit each particular case, composed of clay made porous, which burns at not less than 2500 degs. Fahr., has no superior at the present time.

The designs which were first recommended for acceptance by the government engineer were prepared by Mr. M. J. O'Meara, of the Fawcett Company, and were



DESIGN FOR COLUMN COVERING USED IN BOTH CASES.



SKETCHES SHOWING FLOOR CONSTRUCTION AND METHOD OF FIRE-PROOFING GIRDERS AS SUBMITTED BY THE FAWCETT COMPANY.

closely followed by the Government when making its own designs for the work.

Selected Miscellany.

NOTES FROM NEW YORK.

Nothing disturbs business in this country so much as the turbulence and excitement just preceding our presidential elections, and we are all glad that it is settled. Probably no class of men would have suffered more than



ST. PAUL'S CHURCH, CHICAGO. H. J. SCHLACKS, ARCHITECT.

General View looking from Communion Rail toward Organ Gallery.

A feature of this part of the church is the "sounding board" splay arch over the organ. This arch is also in common brick and will be decorated in color.

the architects, if the result had been different; for to my personal knowledge several large buildings, for which plans were prepared months ago, were not started until there was a surety of the continuance of present conditions.

The architects of New York formed a conspicuous element of the great sound money parade. They were led by Mr. Bruce Price, who made a dignified and able general.

A few weeks ago a terrific explosion shook the entire lower portion of New York. It was caused by a fire in the building of Tarrant & Co., a five-story warehouse designed some years ago by Mr. Henry Rutgers Marshall. A peculiar feature was that for ten minutes after the explosion pieces of wood and tin roofing (some sheets 2 ft. sq.) came sailing down apparently from the clouds, and landed, in some cases, on buildings and in the street almost a mile away.

An article recently published in an architectural magazine calls attention to a characteristic of New York domestic architecture, which is continually becoming more noticeable. It is becoming very common for the houses of well-to-do people, not merely on Fifth Avenue, but on the side streets, to be rebuilt according to an individual and often meritorious design. This will have a pleasing result in gradually doing away with the monotonous rows of brown stone houses, and occasionally sandwiching in here and there something upon which the eye can rest with a sense of relief.

ST. PAUL'S CHURCH, CHICAGO.

THE stranger in Chicago or the resident who fancies that the southwestern part of the city is wholly given over to manufacturing will be astonished by the new St. Paul's Roman Catholic Church, West 22d Place and Hoyne Avenue, Henry J. Schlacks, architect. It is constructed exclusively of vitrified clay. Even the window frames are of this material. The decorative sculptures are white terra-cotta. The altars, communion rail, pulpit, and front of the organ loft are of terra-cotta. Window washes and water drips are of brick, specially designed.

All the material is non-absorbent and, therefore, self-cleaning. The entire ceiling is of brick and tile vaulting. The keystones are terra-cotta, the ribs of the arches and groins of molded brick. Not only is there not an inch of timber in the structure, there is not even a nail.

The prevailing color is buff, exterior and interior, running up to a lighter tone within and down, where required by symphony, into a deep brown.

SOCIETY AND CLUB NEWS.

At a meeting held Oct. 19, 1900, the Memphis Architectural Club was fully organized, and the following officers elected to serve the ensuing year: Cyrus



ST. PAUL'S CHURCH, CHICAGO. H. J. SCHLACKS, ARCHITECT.

View of ribs of transept from top of scaffold after centering had been removed. Note the splay arch in back which forms triumphal arch of sanctuary. This arch has resting upon its haunches the two brick towers which flank the sanctuary.



ST. PAUL'S CHURCH, CHICAGO, ILL. HENRY J. SCHLACKS, ARCHITECT.



HOUSE, WASHINGTON, D. C.
C. B. Keferstein, Architect.

Johnson, president; W. J. Hanker, first vice-president; H. J. MacKenzie, second vice-president; M. H. Furbringer, secretary; Walk C. Jones, treasurer.

The Annual Architectural Exhibition of the T Square Club, of Philadelphia, will be held in the galleries of the Art Club, of Philadelphia, beginning Jan. 5, 1901 to January 19. Entries must be received not later than Nov. 21, 1900. Exhibits must be received not later than Dec. 5, 1900. Jury of Selection meets Dec. 15, 1900. Press view, Saturday, Jan. 5, 1901, 1 to 6 P. M. Opening reception, Saturday, Jan. 5, 1901, 8 to 11 P. M. Public exhibition from Sunday, January 6, to Saturday, Jan. 19, 1901, inclusive, 10 A. M. to 6 P. M., 8 to 10 P. M. Sundays, 10 A. M. to 6 P. M. Exhibition closed all day and evening January 8, 12, and 14. Admission by ticket from any



OLD GATEWAY, CHARLESTON, S. C.

member of the T Square Club or of the Art Club. Exhibits discharged Monday, Jan. 21, 1901, when they will be returned to the owners, or will be forwarded to New York or Toronto (subject to selection by committees representing these exhibitions), as may be directed on the entry slip.

The following-named gentlemen constitute the Jury of Selection and Hanging Committee: Adin B. Lacey, Herbert C. Wise, Charles Z. Klauder, William C. Hays, John Galen Howard, New York; George Bispham Page, Gilbert L. Hindermeyer, Lawrence Visscher Boyd, Philadelphia; J. Randolph Coolidge, Jr., Boston; and Cass Gilbert, New York and St. Paul.

The Chicago Architectural Club has established an annual scholarship prize of \$250. The fund so provided is to assist the winner in defraying the expenses of a European trip devoted to architectural study.



HOUSE, WASHINGTON, D. C.
Harvey Page, Architect.

The prize will be awarded annually to the winner of a series of monthly competitions.

The subject of the competition for the current club year will be the residence of an American minister in an important foreign city, and the problem will be subdivided into five parts or stages, each constituting a monthly problem in design.

The Thirty-fourth Annual Convention of the American Institute of Architects will be held in Washington, D. C., Dec. 12, 13, 14, and 15, 1900.

In addition to the reports of the standing and special committees, papers prepared by the following-named members will be read: W. L. B. Jenney, C. Howard Walker, Edgar V. Seeler, H. K. Bush-Brown, Frederick Law Olmsted, Jr., Walter Cook, R. Clipston Sturgis,

John Galen Howard, A. D. F. Hamlin, K. Honda, and Joseph C. Hornblower. The headquarters of the convention will be at the Arlington Hotel.

At the monthly meeting of the Executive Board of the Architectural League of America, held November 6, the members of the committees on "Ethics and Competition Code" and "Current Club Work" were appointed, thus completing the standing committees of the league.

The members of the standing committees and the organizations to which they belong are as follows: "Ethics and Competition Code." The Architectural



ST. MICHAEL'S CHURCH, PHILADELPHIA, PA.
EDWIN H. DURANG, ARCHITECT.

Faced with "Ironclay" fire flashed mottled brick, made by The Columbus Face Brick Company and supplied by O. W. Ketcham, Philadelphia Agent.

League of New York: Chairman, Walter T. Owen, Julius F. Harder, Percy Griffin. "Current Club Work." The St. Louis Architectural Club: Chairman E. J. Russell, E. G. Garden, W. B. Ittner. "Exhibition Circuit." The Cleveland Architectural Club: Chairman, Victor E. Rondel, Charles S. Schneider, Wilbur M. Hall. "Foreign Exhibit." The T Square Club of Philadelphia: Chairman, Lawrence V. Boyd, Louis Calvert, Gilbert L.



STABLES, BELLE ISLE PARK, DETROIT, MICH.
MASON & RICE, ARCHITECTS.

Roofed with Ludowici Roofing Tile.

Hindermeyer. "Education." Chairman, John Watrous Case, Detroit Architectural Club; Albert Kelsey, T Square Club, Philadelphia; Prof. J. M. White, The Architects' Club, University of Illinois, Urbana, Ill.



ENTRANCE, HOUSE AT HAMILTON, MASS.

"Publicity and Promotion." The Chicago Architectural Club: Chairman, Henry K. Holsman, William K. Fellows, Walter B. Griffin.

The members of the special committee on "Municipal Improvement" are the following: Chairman, H. K. Bush-Brown, Architectural League of New York; John M.



TERRA-COTTA ARCHES, ENTRANCE OF POST-OFFICE,
WASHINGTON, D. C.

Work executed by the Central Fire-proofing Company.

Carrere, Beaux Arts Society, New York; F. W. Striebing, Cleveland, Ohio; Dwight H. Perkins, Chicago, Ill.; Edgar V. Seeler, Philadelphia, Pa.; Charles M. Robinson, Rochester, N. Y.; Mr. Howe, Boston, Mass.; George Cary, Buffalo, N. Y.; Edwin Henri Oliver, New Orleans, La.

Mr. Victor E. Rondel, chairman of the committee on "Exhibition Circuit" reported that an exhibition circular had been sent to all the club who were to receive the circuit drawings, and that the dates of exhibition had been scheduled as follows: Philadelphia, January 5-21; Cleveland, January 28-February 9; New York, February 16-March 9; Washington, March 15-21; Chicago, March 28-April 15; Urbana, April 20-27; St. Louis, May 6-20; Cincinnati, May 27-June 7; Pittsburgh, June 13-20; Toronto, June 15-July 1.

NEW BOOKS.

CHURCHES AND CHAPELS; THEIR ARRANGEMENTS, CONSTRUCTION, AND EQUIP-



CARTOUCHE AND FESTOONS BY CLINTON & RUSSELL, ARCHITECTS.

Perth Amboy Terra-Cotta Company, makers.

MENT. — By F. E. Kidder. Wm. T. Comstock, New York. 1 vol., oblong; 8vo. Cloth, \$3.00.



HOTEL "LORRAINE," FIFTH AVENUE AND 45TH STREET, NEW YORK CITY. JEREMIAH O'ROURKE, ARCHITECT.

Built of cream white bricks, made by Sayre & Fisher Company.

tions of dimensions, the relation of the various parts to each other, as well as the limitations due to construction, present themselves at once. To answer these requires considerable time and study. If the book that now appears under the title given above is at hand, how much of this time may be saved.

To the architect who occasionally must give some con-

This work is much in line with the books on Building Construction by the same author, and devotes a large amount of space to constructive features, although it does not neglect design, but gives over fifty plates of plans, elevations, and perspective views of modern churches, which have been erected by himself and other prominent church architects.

FURNITURE DESIGNING AND DRAUGHTING. —

By Alvan Crocker Nye, Ph.B. Wm. T. Comstock, New York, N. Y. One octavo vol. Cloth, \$2.00.

Any one who has made an attempt at furniture designing realizes how difficult it is to obtain the data necessary for beginning work, unless there is a furniture shop close at hand. Many ques-



DETAIL BY CLINTON & RUSSELL, ARCHITECTS.

New York Architectural Terra-Cotta Company, makers.

sideration to furniture, the tables of dimensions, if not the entire work, will be a great aid. In fact, this is a



DETAIL BY J. E. R. CARPENTER, ARCHITECT.
Excelsior Terra-Cotta Company, makers.

serviceable book for every one who has to do with drawings for furniture.

THEATERS: THEIR SAFETY FROM FIRE AND PANIC, THEIR COMFORT AND HEALTHFULNESS.—By William Paul Gerhard, C. E. Bates & Guild Company, Boston, Mass. Cloth, \$1.00.

The author takes up in detail the question of safety, and shows means by which present unsatisfactory condi-



DETAIL.
Northwestern Terra-Cotta Company, makers.

tions may be remedied, and discusses the following topics: Means of escape; measures tending to prevent fire and for quickly detecting and signaling one which may occur; protection of the audience and stage personnel from fire and smoke; localizing and restricting fire; means for saving life, fighting fire, and guarding against panic. Under comfort and sanitation the following topics are treated in like manner: The unsanitary condition of theaters; ventilation, heating, and lighting; floors, floor coverings, walls, ceilings, and furniture; dressing



PANEL BY GEORGE B. ROGERS, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, makers.

rooms; drainage, plumbing, and water supply; removal of refuse; cleaning, dusting, and sweeping; and periodical sanitary inspection.

THE "Year Book" of the School of Architecture of the University of Pennsylvania appeals to us in a most pleasant manner. There is no city in the country



PANEL BY J. T. W. JENNINGS, ARCHITECT.
American Terra-Cotta and Ceramic Company, makers.

that is any more keenly alive to the possibilities of architecture as a fine art than Philadelphia; and the recent remarkable development in appreciative art which the city has experienced has been so closely allied with the growth of the School of Architecture in the University of Pennsylvania that the two can fairly claim a relationship. The illustrations in the "Annual" are made up of photographic reproductions of the work of the students, and show a very high grade of class work. We appreciate that the designs shown are undoubtedly picked from



CAPITAL.
New Jersey Terra-Cotta Company, makers.

the whole work of the college, but an architectural department which can show such fine pickings speaks for itself.

MISCELLANEOUS ITEMS.

The architectural faience for the interiors and exteriors of all the elevated stations in Boston is being furnished by the Grueby Faience Company.

The Hartford Faience Company is at present en-

gaged in turning out a number of large orders for their terra-vitræ tiles for wall work.

Celadon Roofing Tile are being supplied by Charles Bacon, Boston agent, on the following new contracts in Boston: Trinity Church, Shepley, Rutan & Coolidge, architects; chapel of Immaculate Conception, J. A.



DETAIL BY BARNEY & CHAPMAN, ARCHITECTS.
Atlantic Terra-Cotta Company, makers.

McGinty, architect; residence for Mrs. John L. Gardner, W. T. Sears, architect.

Sayre & Fisher Company's brick are being supplied by Charles Bacon, Boston agent, on the following new contracts: Residence, Boston, J. T. Kelley, architect; pumping station, Lincoln, Mass., and bank building, Boston, George F. Newton, architect; armory, Medford, Mass., Shepley, Rutan & Coolidge, architects.

Charles Bacon has been appointed Boston representative of Sears, Humbert & Co., who are sole agents for the La Farge and Whitehall Portland cements.



OLD GATEWAY, CHARLESTON, S. C.

The First Universalist Church, of Buffalo, Green & Wicks, architects, which is illustrated in the Plate Form of this issue, is built of a light-colored Pompeian brick laid up in Akron cement, manufactured by the Union Akron Cement Company, Buffalo. There is no oxide of iron or manganese in this cement, and it will not color the whitest marble. It is also very strong, and suitable for any class of stone, marble, or brickwork.

The Columbus Brick and Terra-Cotta Company report an unusually good business for this time of the year.

Among the contracts on which their brick will be furnished are: Lynchburg National Bank Building, Lynchburg, Va., E. G. Fry, architect; Boys' Industrial School, Lancaster, Ohio, Richards, McCarty & Bulford, architects; office

building, Detroit, Mich., Donaldson & Meier, architects; Pillsbury's Home for Girls, Minneapolis, Minn., C. R. Aldrich, architect; hotel, Jackson, Ohio, Yost & Packard, architects; chapel, Parkersburg, W. Va., H. R. Warne, architect; the Connecticut Mutual Insurance Building, Hartford, Conn.; office building for Senator Clark at Butte, Mont.; and a church at Norfolk, Va.

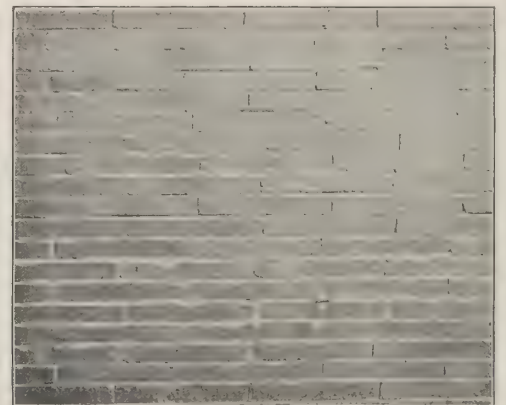


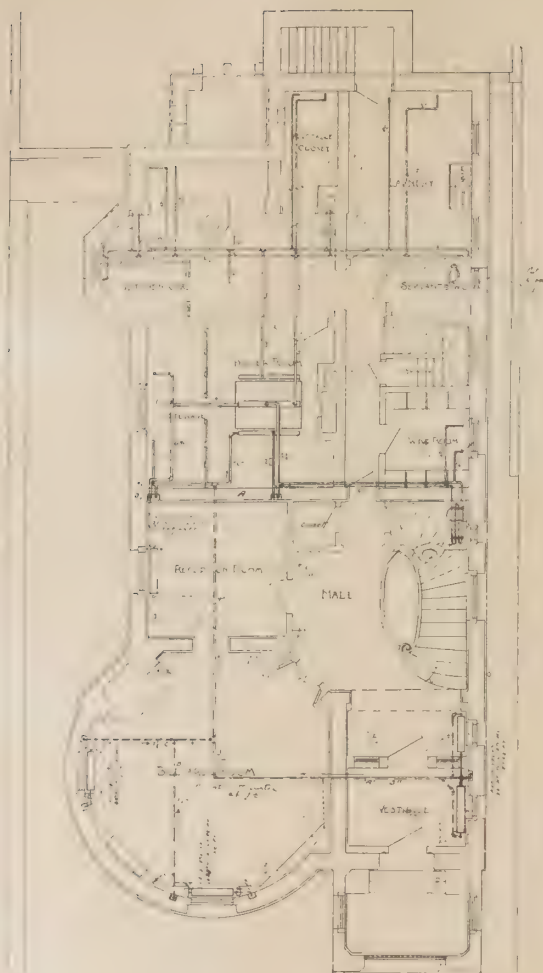
CROWN MOULD, MAIN CORNICE.
GEO. S. MILLS, ARCHITECT.
Indianapolis Terra-Cotta Company, makers.

The Columbus Brick and Terra-Cotta Company, of Columbus, Ohio, has just issued a catalogue, which has artistic as well as practical merit that is sure to recommend it to the attention of architects and builders alike. Work by D. H. Burnham & Co., Henry Ives Cobb, Yost & Packard, R. H. Robertson, Jenney & Mundie, Long & Kees, Richards, McCarty & Bulford, and several other well-known firms is illustrated, in addition to drawings of more than two hundred shape and ornamental bricks. Additional value is given the illustrations of buildings by a statement of the kind and color of the bricks used in each operation. Such publications as this are not mere advertisements: they are works of value because they contain reliable information which does not naturally find its way into other channels.

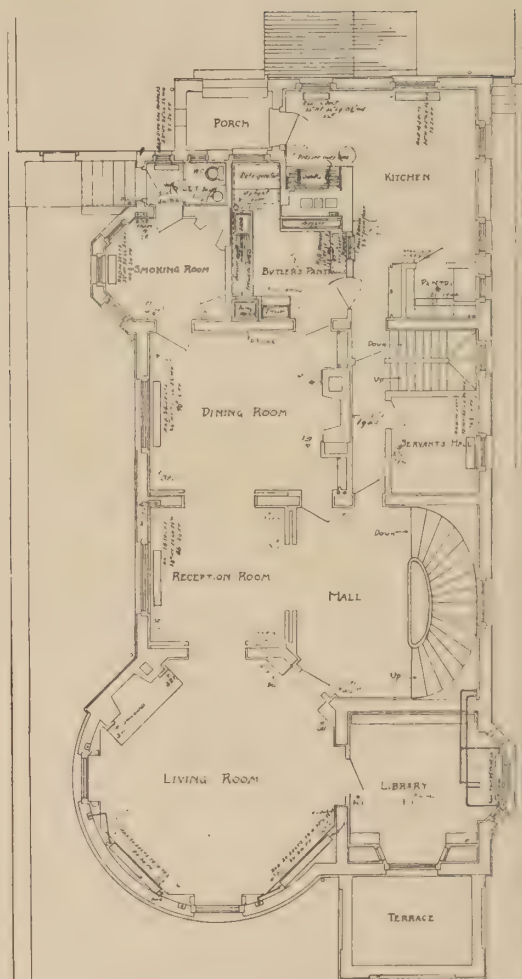
The accompanying illustration shows a section of wall constructed of the new Roman shape, red-face brick that Messrs. Fiske & Co., Boston, are now placing upon the market. This brick is made by the "mud" or plastic process and is, we believe, the first Roman shape red brick, made in this manner, ever put upon sale. In texture it resembles somewhat the "Harvard" brick, having a slightly rough appearance, producing in the wall a soft, beautiful tone.

We have received a number of inquiries from architects from all sections of the country for a brick of this nature, and we are pleased to announce that Messrs. Fiske & Co. have met the demand. Further information will be given by applying to Fiske & Co., 166 Devonshire Street, Boston, Mass.

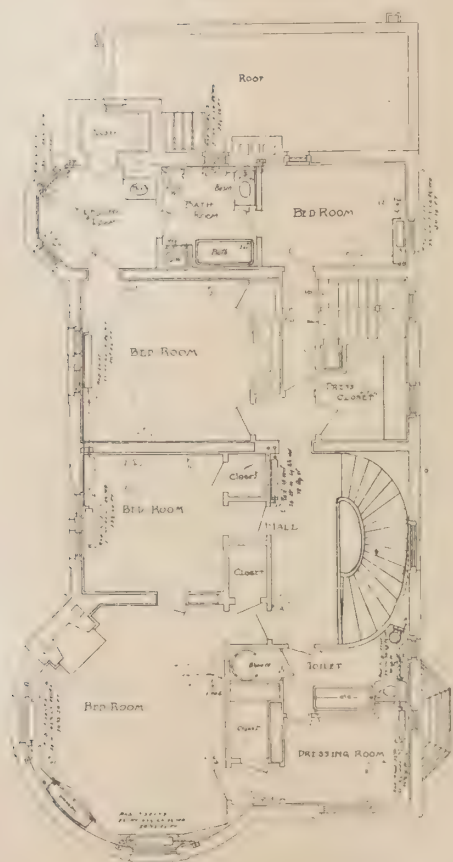




GROUND FLOOR.



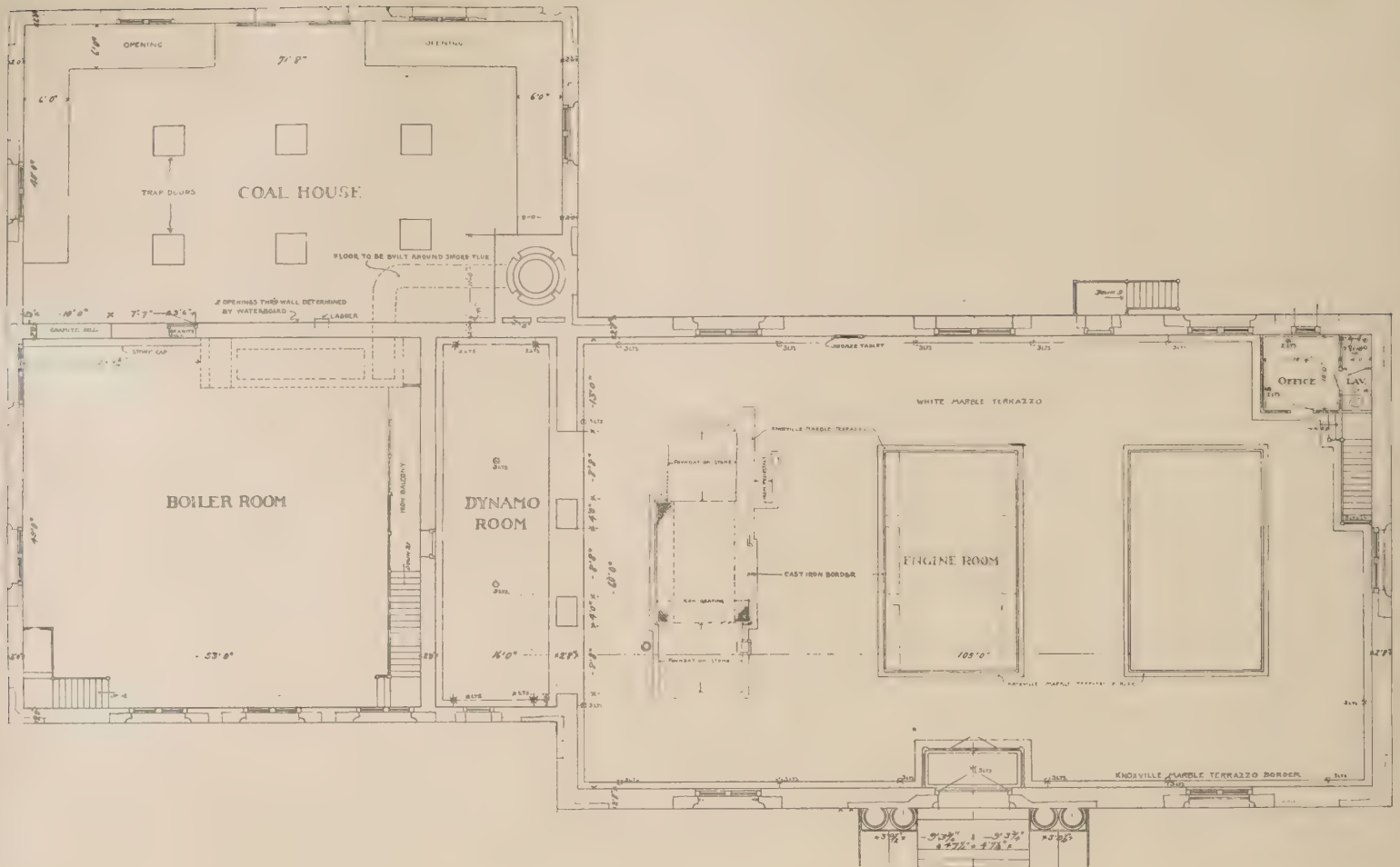
FIRST FLOOR.



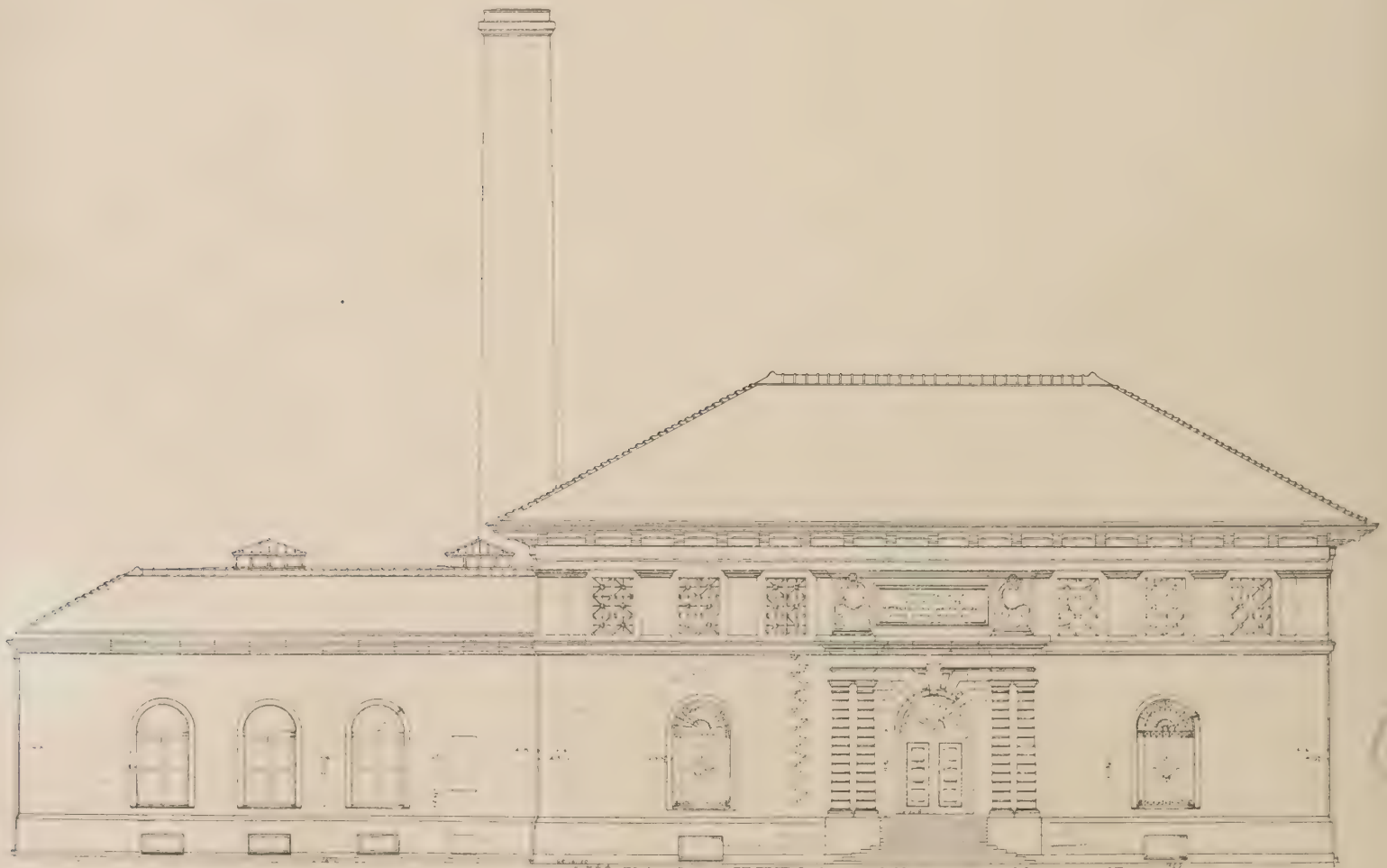
SECOND FLOOR.



HOUSE AT BUTTE, MONTANA.
LORD, HEWLETT & HULL, ARCHITECTS.



PLAN.



FRONT ELEVATION

PUMPING STATION, SPOT POND, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

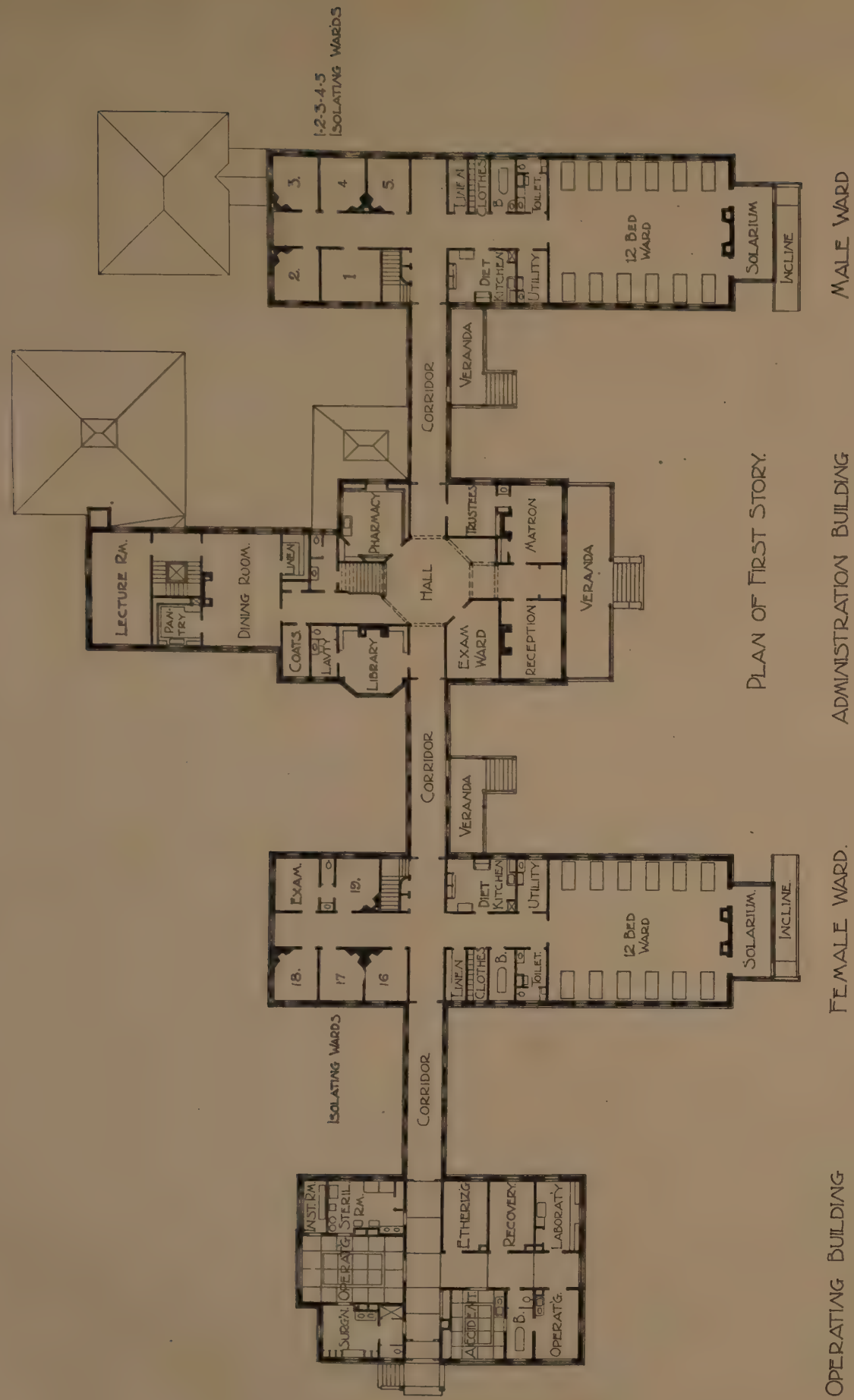


FRONT ELEVATION.



SIDE ELEVATION.

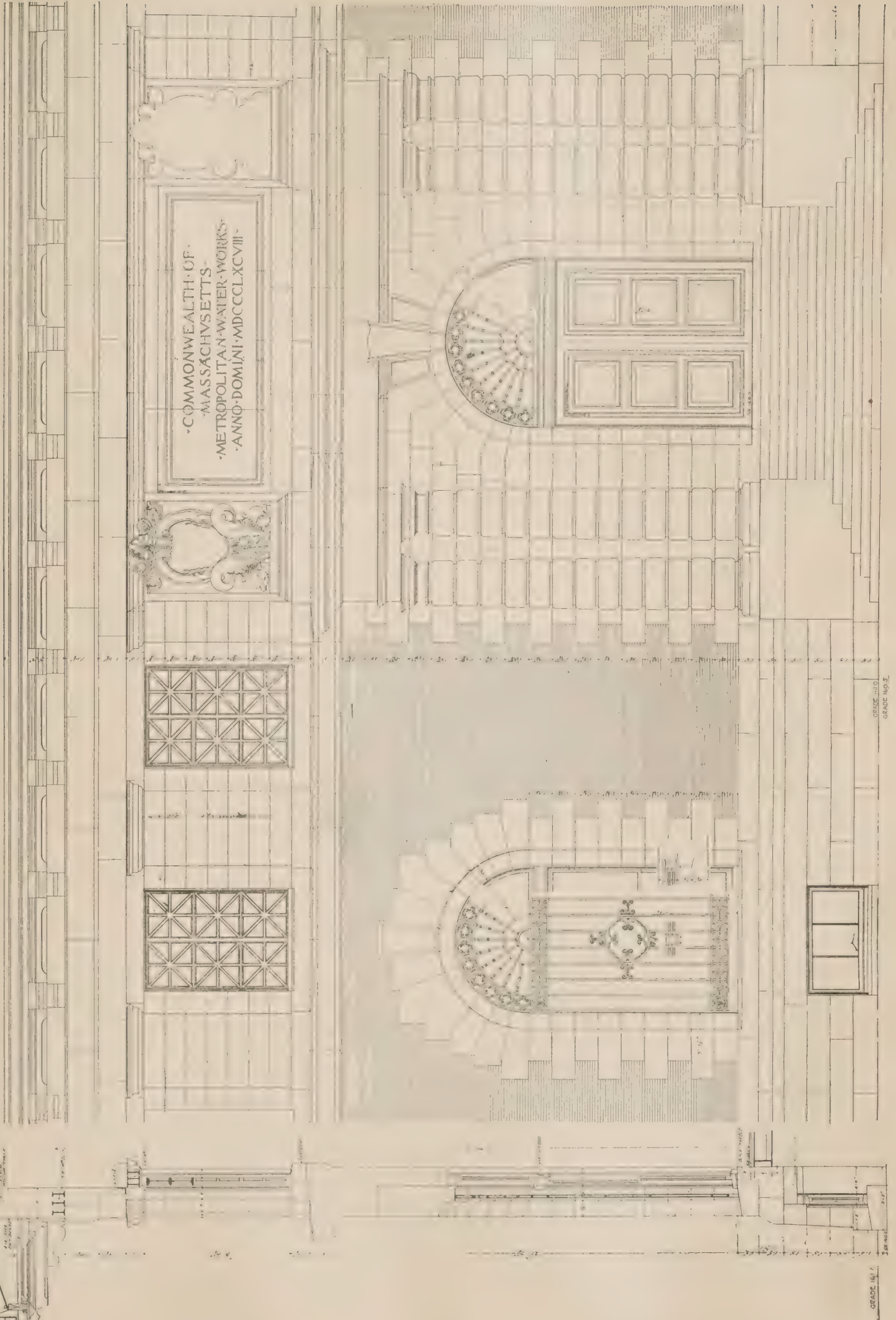
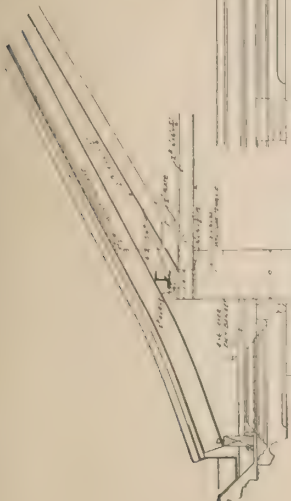
HOUSE AT MONTANA.
LORD, HEWLETT, ARCHITECTS.



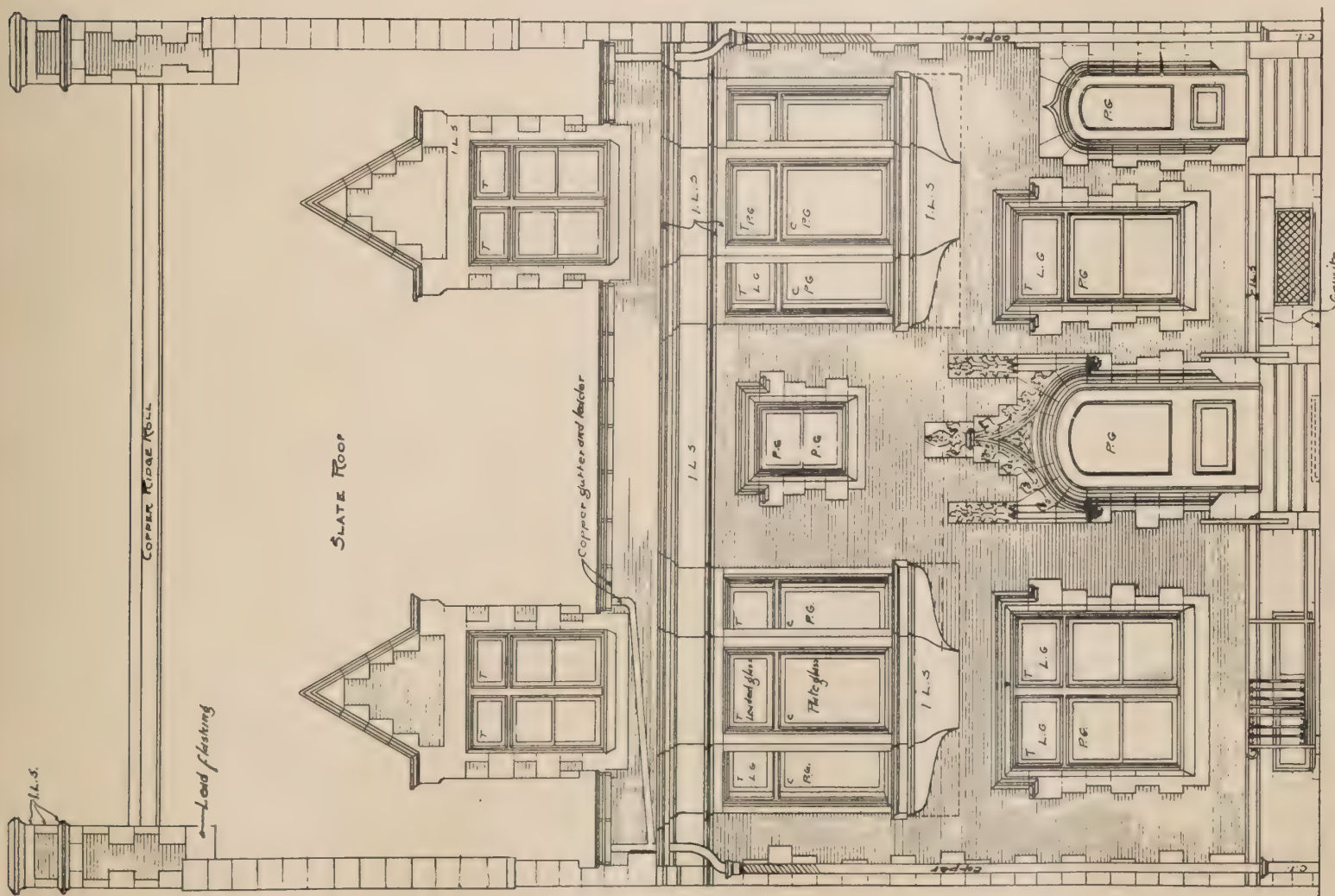
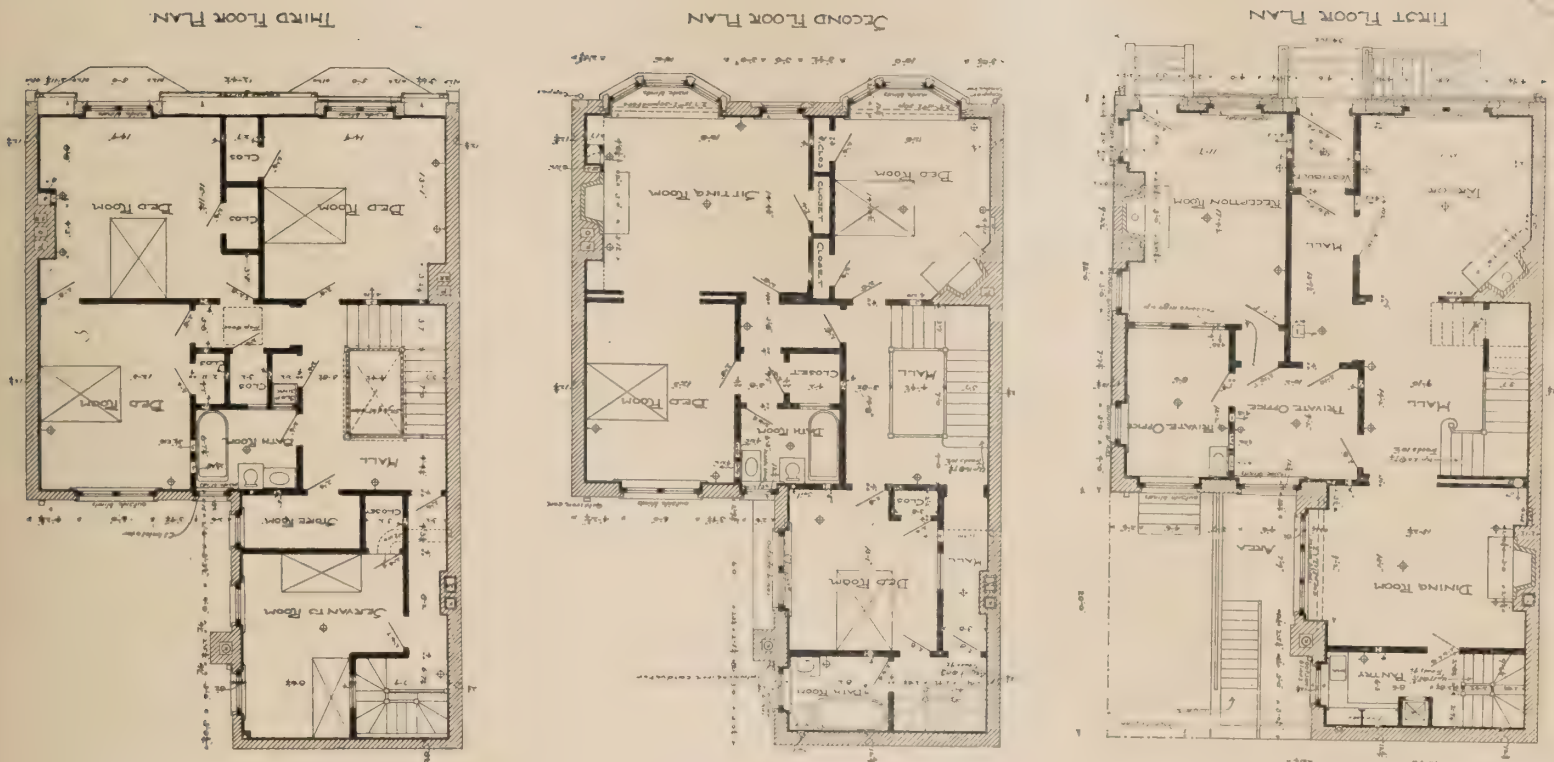
PLAN OF BASEMENT

BURBANK HOSPITAL, FITCHBURG, MASS.
KENDALL, TAYLOR & STEVENS, ARCHITECTS.

PLAN OF SOTTIT.



DETAIL, PUMPING STATION, SPOT POND, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

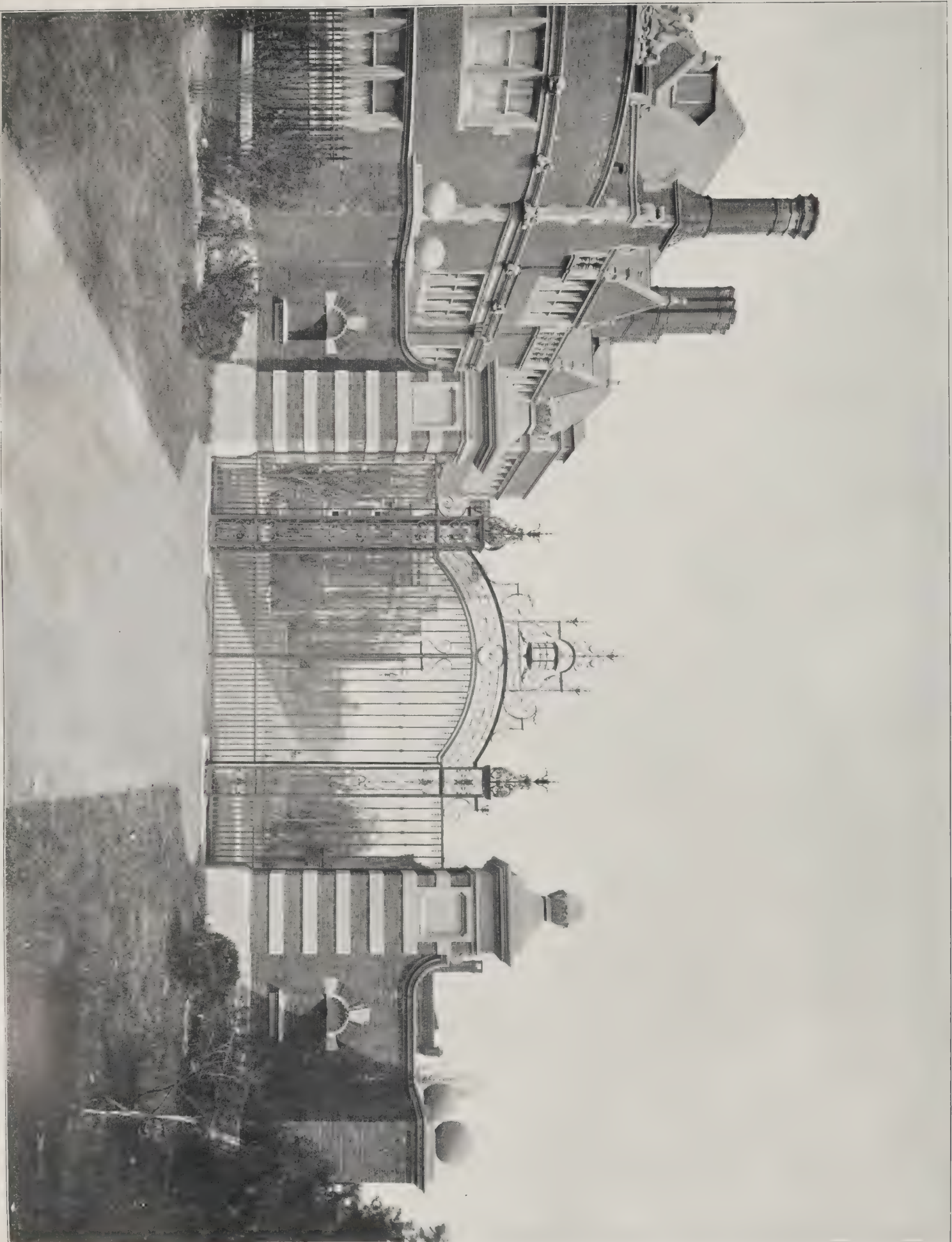


RESIDENCE AND OFFICE FOR PHYSICIAN, HARRISBURG, PA.

RANKIN & KELLOGG, ARCHITECTS.



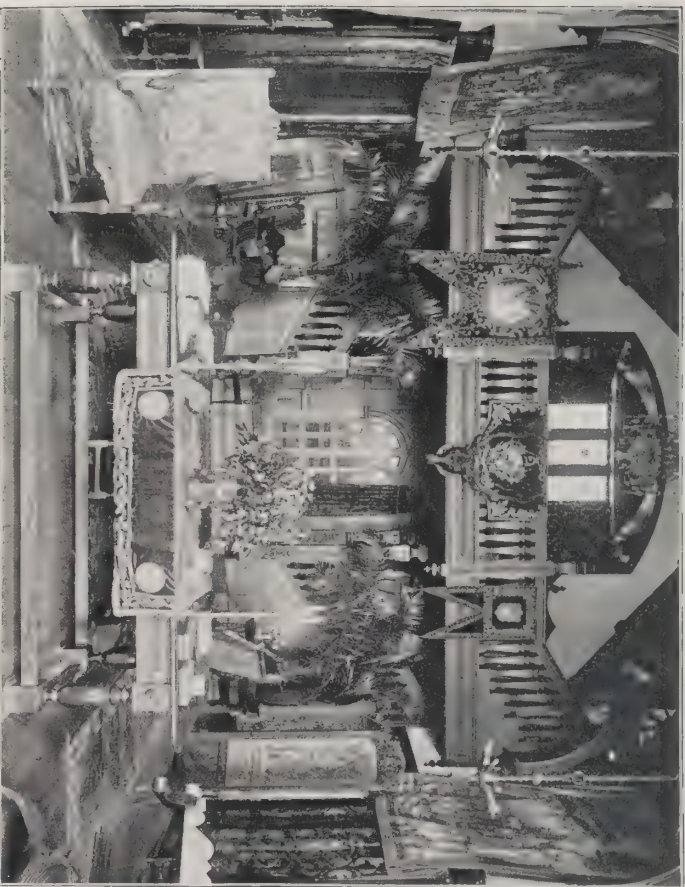
GARDEN VIEW,
HOMER S. HAMILTON, MASS.



MEMORIAL GATEWAY. CLASS 1873. UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.
COPE & STEWARDSON AND F. F. MANN, ASSOCIATED ARCHITECTS.



FIG. 100. — LITTLETON MASS.



HALL.



HALL.



DINING ROOM.



THE BRICKBUILDER.



UNIVERSALIST CHURCH, BUFFALO, N. Y.
REEN & WICKS, ARCHITECTS



REAR.



FRONT.

PUMPING STATION, SPOT POND, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

THE BRICKBUILDER,
DECEMBER,
1900.



CLOISTER OF THE SEVEN CHURCHES OF SAN STEFANO, AT BOLOGNA, ITALY.

VOL. 9
NO. 12

THE BRICKBUILDER

DEC.
1900

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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Agencies.—Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
„ Terra-Cotta . . II and III		Fire-proofing	IV
Brick	III	Machinery	IV
„ Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

THE habit of casting one's eye ahead and trying to measure the possibilities of the future is one which we should be sorry to alter. The perennial hope which makes us see the brightness of coming days makes life happier and longer. Certainly, every one interested in architecture and building can now look ahead with the utmost confidence, for it is many years since the prospect was on the whole so encouraging as it is to-day. In our editorial capacity we are neither Democrat nor Republican, and we, consequently, do not undertake to ascribe all the woes of the country to one party and all the prosperity to another, but we do know, however, that the election is safely passed, the country is free to attend to business for a time at least, without the disturbance of politics, and we can hope for all sorts of good things in store from the generous hand of 1901. Reports from all over the country indicate a very substantial activity in all the building lines, nor is this activity of the kind which keeps people busy merely earning expenses. Never before, apparently, were there so many large opportunities and great expectations nearing realization. Architecturally, we believe the country is entering upon an era of great building enterprises, in which both the architect and the builder will have opportunities in extent and in quality sufficient to satisfy all our desires. People with means to invest are now more willing to spend money than they were a decade ago. The commercial value of mere beauty is more thoroughly appre-

ciated, and the buildings which are now being erected or planned show how greatly the architectural possibilities of this country have developed since what might be termed their first awakening in 1876. And with all the prospects of work and money there comes a deeper, more self-respecting professional feeling among architects and builders, of which we have seen some indubitable manifestation in the last convention of the American Institute of Architects. Life is real and earnest with the American art of the present day, and the future has nothing but hope to show. We have passed the constructive stage, that is to say, we no longer need to be taught elemental lessons of construction, stability, or the proper use of mere material. We are even in a measure growing out of the necessity for learning our fundamental lessons in composition and design, and equipped for practice and theory, for design and business management as never before, the coming year ought to witness a most satisfactory and healthy manifestation of American architecture.

THE address of Mr. Robert S. Peabody, as president, before the recent convention of the American Institute of Architects, is of a kind which ought to make every member of the organization feel proud to be in such good company. It strikes the right kind of note to bring out the best feeling between the Institute as a whole and its members, and to show the truest and most helpful side of the profession. The address has been quite fully reported, but we cannot forbear a few quotations: "One of the greatest charms of our profession is the joyous atmosphere of youth and buoyancy and hope in which we work. The art itself is young with us." "We are all looking forward and not back." "We work together in the full belief that even if the future of architecture does not lie with us, yet, at least, it is to have a great future here. Everywhere the pace set is that of youth, and the rapidity of our building operations makes our work so arduous and full of strain that the strong and vigorous only survive. There are no old architects among us. If an architect last at all, he lasts young."

That a man who occupies the position Mr. Peabody does, with the large business interests constantly passing under his immediate direction, can express sentiments of this kind is the most eloquent testimony to the high standard which the best of our architects have set for themselves.

THE BRICKBUILDER has, from time to time, instituted among its readers competitions in design for various small problems. These competitions have

been undertaken not merely to encourage our younger readers by offering stimulating prizes, but with a view of deliberately aiding in the developing and extension of good architecture in materials in burnt clay. Our problems have not been chosen at random, but have been such as we have felt could be readily adapted to the materials named. Appreciating, however, that the idea of a competition is not always attractive to a man in the busy course of his profession, we have asked a number of our leading architects to prepare contributions to our pages, showing their own ideas on some of the problems which were selected. The first series, "A Village Bank," and the second series, "A Village Inn," both chosen for this year, are extremely practical, and are typical of a large class of structures, which are springing up in astonishing numbers all over this country, and to which the architectural profession is yearly applying a larger measure of study and intelligent design. The past half century has been characterized by an enormous growth of our large cities and a corresponding development of the suburbs. It is precisely in these suburbs that we must look for the multiplying of such structures as these series are intended to call out. We feel that the thought which these contributions will represent will go a long way towards making possible the realization of a straightforward, artistic treatment of those minor problems which ought to be so fascinating, but which, unfortunately, are but too frequently neglected.

"THE BRICKBUILDER" COMPETITION. VI.
AN ENTRANCE TO AN ART MUSEUM.
PROGRAM.

THE design is to provide for the entrance porch of a large metropolitan art museum, of the nature of the South Kensington Museum, London. The entrance will be in the center of a perfectly blank wall, permitting of an individual treatment without reference to the design of the building as a whole. The entrance should be recessed 10 ft., and should allow for four doors each 3 ft. wide, besides such transoms or side lights as are incidental to the character of the design. The entrance leads to the first floor, which is supposed to be at an elevation of 8 ft. above the street, a flight of steps leading thereto projecting from the line of the building. Any treatment of columns, pilasters, or buttresses is to project from the building line. The height of the first story is to be 20 ft. in the clear. The design is to be such as is adapted to working out in burnt-clay products.

DRAWINGS REQUIRED: An elevation drawn to the scale of $\frac{1}{2}$ in. to the foot, together with a section taken at right angles to the front, and a sketch plan at a scale not exceeding $\frac{1}{8}$ in. to the foot; these drawings to be in black ink, with no wash work, on one sheet measuring 20 ins. wide by 12 ins. high. The drawing is to be signed by a *nom de plume*, or device, and accompanying the same is to be a sealed envelope with the *nom de plume* on the exterior, and containing the true name and address of the contestant.

Drawings are to be delivered, flat, at the office of THE BRICKBUILDER, 85 Water Street, Boston, on or before Feb. 1, 1901. For the three designs placed first, THE

BRICKBUILDER offers prizes of twenty-five, fifteen, and ten dollars, respectively. All premiated drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish any and all drawings submitted.

The competition will be judged by Mr. Edward Robinson, Curator of Classical Antiquities, Museum of Fine Arts, Boston.

THE SEVEN CHURCHES OF SAN STEFANO AT
BOLOGNA.

IN the Piazza della Mercanzia at Bologna is one of the most curious groups of brick buildings in north Italy. A collection of seven churches, or shrines, built at periods as far apart as the fourth and sixteenth centuries, crowding and overlapping one upon another, without striking towers or façades, it presents a most interesting and historical picture of the progress of brick construction through the space of twelve centuries. The various buildings, which cover an area of only 250 ft. from east to west and 175 ft. from north to south, are grouped around a central court, or cloister, called the Corte or Atrio de Pilato. This courtyard, shown in the illustration, is a good example of early brick construction, and is said to date from the eleventh century. The font in the center bears an inscription consecrating it to the Lombard kings Luitprand and Hildebrand, the former of whom died in 744. The walls of the church of S. Sepolcro, which closes the west end of the court, are decorated with a very successfully restored ornamentation of colored brick laid in patterns, and the cornices are interesting and simple.

This church, or baptistery, of S. Sepolcro is a singular structure of the eleventh century, octagonal without and twelve-sided within, containing the tomb of St. Petronius. The roof is supported partly by large round piers and partly by slender columns, and the roof of the ambulatory is alternately divided into square and triangular compartments. From the opposite or eastern end of the court opens the church of S. Trinità, the east portion of which is the oldest part of the group, dating perhaps from the fourth century, when the temple of Isis gave way to the shrine of the new faith. South of the S. Trinità is an interesting cloister of two stories—that of the suppressed Celestine monastery. Adjoining the cloisters are two more churches, Della Confessione and S. Giovanni, of the eleventh and sixteenth centuries, respectively, the first being below the general level and serving as a sort of crypt to the second. Then there is the present main church of S. Giovanni di Crocefisso with a curious circular brick pulpit upon its façade, and finally to the north there is the seventh church of SS. Pietro e Paolo, an ancient basilica of the eleventh century, several times rebuilt and lately restored.

The entire group, huddled together, overlapping and projecting into one another, forms one of those curious vagaries of ecclesiastical architecture which are not uncommon in Italy, and which, while having no real merit as an architectural composition, serves to present a striking parallel of early detail in brickwork, which the student is likely to find fully as attractive as many of the larger monuments. It is a pleasure to know that the buildings are being carefully preserved and that a very skilful work of restoration is going on.

The "Village Inn" Series. II.

BY WILSON EVRE, JR.

ALL the world over the "Village Inn" has been a source of pleasure and comfort to the traveler, and there is nothing that encourages travel so much, especially of the unconventional sort, as the number and quality of these inns.

In this country there are a few old taverns, but most of them have run to seed, and a good meal can seldom be obtained, and never one *al fresco*.

The impossibility of obtaining food in the open air in America is something which usually surprises foreigners. All of our summer hotels are equipped with miles of "piazzas" for sitting and promenading, but when the dinner bell rings, no matter how sultry the weather, or how magnificent the view, the "inmates" of these caravansaries are driven into the dining room to feast their stomachs on the massive ingredients of a Yankee "course dinner," their lungs on the vitiated atmosphere of the crowded room, and their eyes on expanses of plaster wall surface and gas fixtures draped in fly muslin. Why the eating of one's dinner in comfort in the free open air should be prohibited is another one of the mysteries which surround the life of the American people.

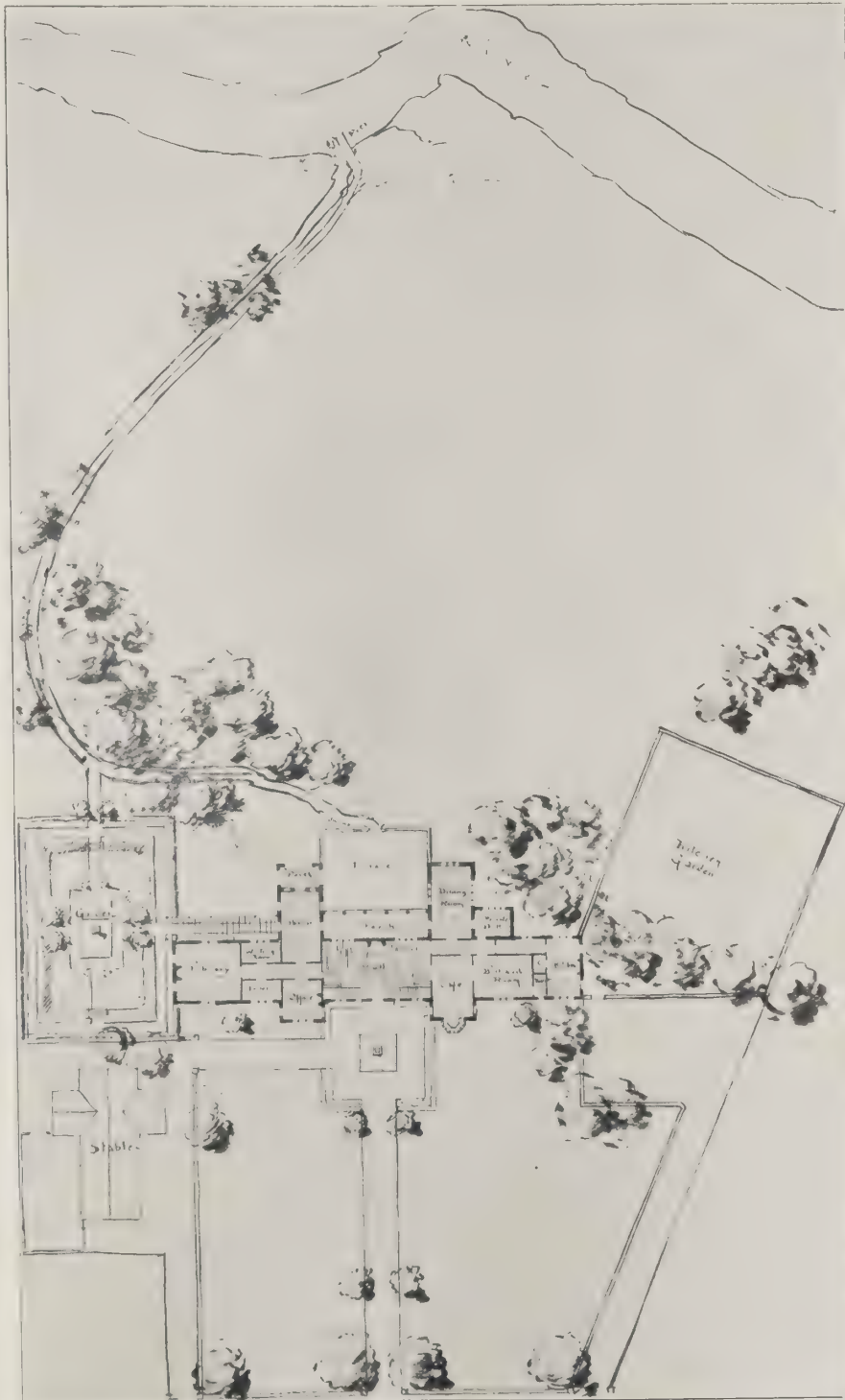
Although our summers are long and the heat intense, some arrangement for eating out-of-doors, as they do in the continental towns and villages, would be a much desired result.

Let one try to plan a summer day's trip into the country, and the difficulty of finding a comfortable place to spend the noonday siesta becomes appalling. In an American village inn, after having

eaten the dinner in the stuffy dining room, one has the choice of a seat on the dusty and glaring veranda, or a haircloth "easy chair" in the dismal hotel parlor; and while the drowsy moments of the summer noontide pass by, one can let his thoughts revert to the little green garden of a French *auberge*, with the grape-vine growing along the gallery, and the dainty *déjeuner* spread in the shade of the *terrasse*. It is, perhaps, neither possible nor desirable that the continental inns should be exactly reproduced in America, nor would the writer claim that all foreign inns are the delightful havens pictured in the foregoing remarks. He has abundant recollections of hostleries that were the opposite in every way—taverns like that described by Dickens: "Never were such labyrinths of uncarpeted passages, such clusters

of moldy, badly lighted rooms, such huge numbers of small dens for eating and sleeping in, beneath any one roof as are collected together between the four walls of the 'Great White Horse' at Ipswich." The point he desires to make is that in America the bulk of the village inns are deficient in beauty, comfort, and cuisine,—the three essentials of a satisfactory lodging-place. It is probable that the first and last of these qualifications will be found in most continental inns; the second cannot be so readily vouched for. That the art of daintily cooking and serving food has not yet been highly developed in our country is something for which the architect may escape blame; the reformation of our public houses from an artistic point of view is an object to which he may well devote his energies.

On the rivers, on the pikes, there are endless opportunities for such village inns in these days of bicycles, trolleys, automobiles, rowing, etc.



PLAN, A VILLAGE INN.

What delightful trips could be made if such conveniences were to be found at available distances, and how many people would take their holiday in this way, staying a few hours or days at each of these stopping-places either for the mere pleasure of traveling or on a sketching, driving, rowing, or walking trip! There are small books published in New England giving a great number of pleasant excursions on the various trolley lines in that part of the country. How much the attraction of such trips would be added to if one could stop in pretty parts of the country, be picturesquely and comfortably lodged, be able to dine out-of-doors, spend a cool night and have attractive views from your bedroom windows, instead of being obliged to make for the nearest town without fail and there lodge at the traveling drummer's hotel, which is hot and uninteresting, probably facing a dusty street, with poor meals and poorer service, and the bar room in full view and the chief feature of the place; and speaking of this, the apartment dedicated to the American bar is another feature which in our ideal inn to undergo a transformation. The twentieth-century tourist will be willing to exchange the delights of the garish room, equipped with its cuspidors and red-hot stoves, with its long bar supporting the elbows of a dozen village loafers, for such a tap room as the author of "Pickwick Papers" describes, where in the open grate burns "a substantial matter-of-fact roaring fire, composed of something short of a bushel of coals and wood enough to make half a dozen decent gooseberry bushes, piled half-way up the chimney, and roaring and crackling with a sound that of itself would have warmed the heart of any reasonable man." . . . "A charming prospect of the bar . . . with delightful rows of green bottles and gold labels, together with jars of pickles and preserves, and cheeses and cold hams, and rounds of beef arranged on shelves in the most tempting and delicious array." In this tap room of our fancy we can ensconce ourselves in front of the fire and linger in peace over our hot punch after a tingling sleigh-ride, while the drummers and yokels can look elsewhere for the "stand up" potatoes to which they are accustomed.

As to the requirements of a village inn, it should first of all be unpretending; it should be low and rambling in character, for if it exceeds a certain limit of size, height, and accommodation it becomes a summer hotel.

It should have the very best stabling accommodations and service, the use of the stable being one of the principal features of an inn; it should have an old-fashioned flower garden and a good-sized kitchen garden; if the grounds adjoin a river or bay there should be a boat landing.

In my rendering of the problem I have placed the inn at a sufficient distance from the road to avoid the dust and traffic of the highway, and sufficiently near to this road to be plainly seen by passers-by.

I have arranged three entrances, the central driveway, over which is a swinging sign, leads directly to the main entrance of the house and turns in a fore-court.

At the extreme right is the tradesmen's entrance, the drive leading to the kitchen department and having a separate turn hidden by trees.

The stable entrance is to the extreme left, and leads to the stable as well as the fore-court by a connecting driveway. The kitchen and stable drives should be

walled or hedged, as it is not desirable to have this traffic in full view. The plan of the house itself has a central hall, to the right of which are the tap rooms, the public and private dining rooms, and the billiard room, service rooms, kitchen, etc. To the left of office are parlor, library, and writing rooms.

A porch and an open terrace looking south towards the river and opening from the dining room, as well as from other parts of the house, serve as a place for dining on summer evenings. A path leads from this terrace through the orchard to the garden gate; this garden is also entered from the library, the windows of which will be to the floor.

The second story, or bedroom floor, will have a moderate number of bedrooms, not enough, again, to place it in the class of a summer hotel, and ample servants' accommodation over the kitchen wing. Over the ground-floor porch there will be a second-floor porch for the use of the bedrooms.

There is enough room on the grounds for games, such as tennis and even golf, although this could hardly be expected at all stopping-places of this character, many of which would of necessity be much more limited in their surroundings; part of the basement could be used for a bowling alley and shuffleboard.

The material I would use in the construction of this inn is brick and rough cast; any expensive material, it seems to me, should be avoided, and cut-stone, elaborate detail or carving should not be used. These inns should not, to my mind, be playthings, for under this guise they would soon pass out of existence, as fads invariably do. They should be started on a good working basis with no frills, places that all classes of people can use, with moderate prices but good service, and though they should be cheaply and simply built, they open a field for picturesque treatment, which is almost unlimited.

As a matter of fact, the rotating wheel of time is fast bringing the American village inn into prominence once more. Before the days of railways, the stage taverns were the centers of the traveler's life, and many a quiet and grass-grown New England village, now inaccessible by steam train, was a center of activity in the '20's and '30's when the turnpikes were the nation's chief thoroughfares. The steam railroads drained these villages of their traffic, and for two or three generations they slumbered undisturbed, until with the advent of the bicycle, precursor of the trolley car and the automobile, the traffic of the city came out once more into the winding highways. Several inns of the one ideal class are now in existence in the vicinity of Boston, the proprietors of some of them having utilized ancient and picturesque or historic houses, shaded by great elms, and endowed with graceful dignity given by a century of usefulness. The growing fondness of our people for out-of-door excursions, as well as the passion which American femininity possesses for trolley-car riding, is bound to increase the demand for houses of this class, both for winter and summer resort. An historic as well as naturally beautiful location is worth seeking in order to attract the very desirable class who feel an interest in the early history of our country, and who would visit the spot for this, if for no other reason, and who would be glad incidentally of a quaint and attractive lodging-place.



A VILLAGE INN. WILSON ERVE, JR.

Hospital Construction from a Medical Standpoint.

BY HENRY M. HURD, M. D.

Superintendent, The Johns Hopkins Hospital, Baltimore.

THE pioneer era in hospital construction when builders were satisfied to secure a maximum of accommodation for a minimum of expenditure has passed away. Stability of construction, convenience of arrangement, beauty of form, and a special adaptation of every portion of the hospital buildings to the best care of the sick are now considered essential for a good home for the modern hospital. The experience of the past quarter century renders it possible to make the following dogmatic assertions: —

I. General hospitals should be built upon the pavilion plan to secure the best arrangement of buildings, a free exposure to sun and air, the best form for subsequent addition and development, and, in short, the most favorable conditions for the evolution of the perfect hospital.

II. The material used for construction, other things being equal, should be brick with stone or terra-cotta trimmings or ornaments, as offering less expensive construction, larger openings for sunlight and air, increased protection against fire, drier and, consequently, more hygienic apartments, better opportunities to secure walls with air-spaces and room for heating and ventilating flues, and a higher standard of general construction than is possible by the use of any other material.

III. Stone is the most expensive building material for a hospital, because to secure fireproof construction or flues for ventilation or heating, the interior must be lined with brick. Walls constructed of stone are necessarily thick, and openings for light and air are thus diminished in size.

IV. Wood is wholly unfitted for the construction of a large hospital building or buildings, because such structures are frail, insecure, temporary, liable to destruction by fire, prone to become a breeding place and a refuge for vermin, and a nidus for germs of disease. Such buildings cannot be kept in a sanitary condition without great labor; they are expensive to keep in repair, and are liable to constant damage and deterioration from daily wear and tear; and, above all, they are always certain to be destroyed by fire.

V. Cage construction with steel and staff is unnecessarily expensive, and does not offer any advantages corresponding with the increase in expense.

Stone as a building material is undoubtedly capable of such handling as to furnish structures of higher forms of beauty, which may possibly be more fitting monuments to the memory of departed benefactors, but its expense renders it out of the question to build every part of a hospital of such high-priced material. Hence, whenever stone is used there is a tendency to build the exposed portions of a memorial chapel or of an administration building of stone, and to piece out less conspicuous portions with brick, as a cheaper and equally durable material. The remaining buildings are generally built of

brick. From the standpoint of consistent, uniform, and appropriate construction, it is preferable to have all buildings of the same material, as more pleasing and permitting upon the whole a higher standard of construction. Hence, a hospital built wholly of brick is preferable to one built partly of brick and partly of stone.

The experience of the past quarter century has equally demonstrated that the hopes engendered by the Civil War, that an era of cheap because temporary hospital construction had been attained, could not be realized. It was found in reality that so-called temporary structures had a perennial life, and became permanent not because they were good and well-fitted for their uses, but from a mistaken notion that when the time had come for their destruction they were too good to throw away. They were too valuable to destroy, and too worthless to repair, and, like half-worn garments, they proved sources of embarrassment to their occupants, and invariably became dilapidated, insanitary, and unsightly. It is apparent that a hospital building will be permanent whether well-built or not, and it is consequently of prime importance that it should never, except in the case of field hospitals or a cottage hospital, be constructed of wood. In some of the older hospitals, the mistake has often been made to patch up old and obsolete buildings, or to construct new and improved buildings, for the accommodation of a portion of a hospital, which in other portions may be unsightly and ill-adapted to hospital uses. Wherever practicable the plan of a hospital should be perfected in every detail before the work of construction is begun. Such a course will insure a proper balance of accommodation of all departments and an artistic treatment of details unattainable where buildings have been erected, one by one, in successive architectural eras to meet pressing necessities.

Arrangement of Buildings.—In a hospital built on the pavilion plan, the wards should not be above two stories in height, in addition to a good basement, and the arrangement in order should be as follows: 1. A surgical building for men, designed to accommodate cases of acute and abdominal surgery upon the first floor, and less acute cases and infected cases upon the upper floor. 2. A medical building for men, with beds for acute and less acute cases upon the first and second floors, respectively. 3. Two similar medical and surgical buildings for women. 4. A building for obstetrical and gynecological cases. 5. A building for patients of either sex who suffer from severe infectious and contagious diseases, or who are delirious or otherwise unpleasant, or sources of peril to their fellow-patients. 6. If the site of the hospital is an appropriate one, a detention building for the insane should also form part of the general plan. 7. Operating-room pavilions, containing all necessary rooms for surgical and gynecological operations. These should possess examination, preparation, and etherizing rooms, rooms for photography, for the sterilization of dressings, and operating rooms. Special provision for medical teaching should be made in connection with each operating-room block. At this age of the world, and in the present complexity of medical instruction, each general hospital in its construction should bear in mind the needs of the medical student for medical and surgical instruction. 8. Outpatient

departments, arranged for at least ten divisions of service and five recitation or operating rooms for medical and surgical teaching. These latter rooms should be large and airy, and should be arranged with separate entrances for students. 9. A convalescent home, situated in the country in a desirable location for the reception of patients convalescing from serious surgical operations, or from exhausting and long-continued diseases. These buildings may be less expensive and more home-like structures than those of the hospital proper.

Coming to the details of the hospital wards, it may be said that each ward should furnish beds and accessory room for at least thirty patients. The greater portion of this accommodation ought to be in a large ward so separated from other buildings as to furnish light and air upon three sides. The long axis of the ward should have one end toward the south unobstructed by any other buildings. In addition to the long wards two smaller wards for acute diseases, accident cases, or delirious patients should be provided. The lavatory and water-closet should be in a projection of the building, if possible with an open-air cut-off between the latter and the ward, and the two rooms to avoid confusion should be entirely separate. The bath room should be adjacent to the lavatory. There should also be a slop room, containing sinks for emptying and washing utensils, a separate lavatory and water-closet for the use of nurses, a linen room and a store room for patients' articles. There should also be provided a small room in the male wards to be used as a coat room and dressing room by the orderlies or male servants. Each ward should be provided with a dining room for convalescents, and a tea-kitchen adjoining for the preparation of food and for emergency cooking. In addition there should be provided a room for a permanent bath, and a room for clinical and microscopical work in the medical wards, or for surgical dressings in a surgical ward.

Heating and Ventilation.—The heating should be with indirect hot-water radiators, or with indirect low steam, and never with direct steam. Heating, in fact, should never be possible without ventilation, efficient ventilation not being practicable with direct steam. The heating apparatus should be in the basement, and the currents of air should be conveyed from the coils through flues in the walls, lined with galvanized iron to render them as frictionless as possible. These flues, if the walls are thick enough to permit it, should be round, but if this is not practicable, the flues may be square or oblong. It makes little difference whether they are 8 by 8 ins. or 4 by 16 ins., provided they are properly situated and connect the heating coils directly with the room they are designed to heat. The apparatus for ventilation should be so arranged that it will be made effective by thermic currents, and not dependent upon mechanical means. Hence, the ventilating flues should by preference terminate in aspirating chimneys heated by steam coils, and the foul air should thus be aspirated from the rooms. Mechanical devices for ventilation by means of fans and blowers are in need of constant attention, and thus become a source of expense. For these reasons, they should be avoided as far as possible. Mechanical ventilation, however, is required in kitchens, laundries, autopsy rooms, and operating rooms, where the heated or impure air cannot be

removed quickly enough by natural atmospheric forces. In some instances hospitals, under special atmospheric or climatic conditions, require to be heated and ventilated by blower fans, which distribute the warmed air from a heating chamber in the basement. This has the objection of much loss of heat from friction against the sides of the flues in the long distances which the heated air must traverse before reaching the more distant wards. There is also danger of an inequality of heating between the nearer and more distant apartments. In climates, however, where in the winter the prevailing winds produce much back pressure, this method of forcing heated air into wards, although expensive, works well. Two open fireplaces should be built in each long ward, and one at least should be given to each small ward or single room. These add cheerfulness to the ward, and are a source of comfort in mild weather before more elaborate means of heating are required, or in severe winter weather to supplement ordinary methods of heating. As far as is consistent with the hygienic condition of the hospital wards, such fireplaces should be attractive, if not highly ornamental. They may also be planned to supplement the system of ventilation. In rooms occupied by patients suffering from offensive or infectious diseases, they are found a great assistance to ventilation. The air which has been warmed by hot-water coils or low steam should be introduced into the wards at the height of 6 ft. from the floor by means of flues in the outer walls. Openings for the aspiration of foul air, on the other hand, should be in the floor or in interior walls, with supplementary openings in the ceiling or at the level of the ceiling. By this arrangement a constant supply of fresh air may be obtained, and a positive interchange of the air of the rooms. Where, as in some institutions, the inlet flues for warm air are in the inner walls, and the outlet flues for foul air are in the outside walls, there is always danger of back pressure from cold air, which finds access about the windows, and acts as an obstacle to the diffusion of the heated air in the room. All outlet flues should be connected with aspirating chimneys, which are either provided with aspirating coils, or with aspirating fans operated by steam or electricity. Inasmuch as all mechanical devices wear out and require more or less constant attention, it is always preferable to depend upon aspiration by thermic currents rather than by steam or electric fans.

The openings in the outer walls for the introduction of fresh air to supply the steam or hot-water coils should be at least 6 ft. above the surface of the ground, and the air should be derived from grassy lawns or other clean open spaces. All attempts to filter air through gauze or cotton wool have thus far proven of little practical avail because the meshes of the filtering material soon become clogged, and without daily, almost hourly, attention, the supply of fresh air to the heating coil is in great measure cut off. An attempt, also, to cool the air of wards in summer by jets of spray has proven impracticable because of the extreme humidity which is thus given to the air—a condition which is much more irksome to the sick than contact with currents of dry air at a much higher temperature. Hence, in summer, heat devices should be employed not to cool the air, but to keep it in motion, and thus to take away from the patient the sensation of dis-

comfort which accompanies slow-moving currents of air heated by a semi-tropical sun.

In the winter time, on the other hand, it is desirable that in the access of heated air the conditions of summer should be reproduced as far as practicable. The air should not be heated to a temperature high enough to deprive it of any undue proportion of its moisture, but it should be introduced into the wards in large amounts, so that the patient may be bathed in air at a temperature but a few degrees above that of summer heat.

Precautions against Fire.—As far as practicable, hospital buildings should be fire-proof, or at least slow-burning, if an absolutely fire-proof structure is not available on the score of expense. Mill-construction, so called, is not to be advised for hospital purposes, because the floors, ceilings, and side walls present an unfinished and unsightly appearance, and are incapable of proper ornamentation. If an attempt is made to cover up the ceiling joists by the use of steel or any other form of unplastered ceiling, the effect is incongruous, and spaces are left for the nesting of vermin. The character of the flooring is also open to criticism from its rough and unsightly appearance. It cannot be rendered smooth or sanitary without an expense, which defeats the principal advantage of mill-construction, *viz.*, cheapness. Wherever such construction has been attempted in hospitals or institutions for the insane, experience has shown the buildings to be short-lived, difficult to keep in repair, and unsatisfactory. The most effectual, and at the same time the least expensive, fire-proofing is obtained by using steel beams to separate the stories, and filling in the spaces between them with terra-cotta lumber. This permits a rough floor above to be covered by a permanent floor, an air-space for deafening, and a ceiling below disconnected from the floor joists and capable of ornamentation. As a precaution against the absorption of the germs of disease, as well as a safeguard against fire, it is preferable that the use of wood as a building material be reduced to a minimum. Hence, door and window frames, window-sills, and bases of wood should be discarded, whenever possible. In the openings for windows and doors there should be rounded corners of molded brick or plaster. All ornamental work about the windows should be discarded, and the window-sills should be of slate or marble, preferably the former, as less liable to become stained. In bath rooms, lavatories, and water-closets, where tile floors are admissible and desirable, all bases should be of iron, Portland cement, or colored marble.

Floors.—A satisfactory material for flooring remains to be discovered. The floor of a hospital ward should be smooth, free from cracks, non-absorbent, uniform in color, easily kept clean, bright and pleasing in appearance. While a tile floor is most appropriate from a hygienic point of view as non-absorbent, it is not well suited to the actual needs of the hospital. The individual tiles become loosened from their setting by wear and are easily displaced, requiring frequent resetting. The surface is hard and slippery, and accidental falls on the part of the helpless, clumsy, and feeble patient or the hurried and pre-occupied nurse, often rendered helpless by having her hands filled with instruments or utensils, are not infrequent. The tile also is cold and

disagreeable to half-protected feet. The general effect of a tiled floor, too, is unhomelike and institutional, and hence, the material should be avoided. The same objections also exist equally to the use of marble and cement, which have the additional disadvantage of being porous. They are liable to absorb liquids and thus become stained and unsightly. Marble wears unequally, and requires frequent repairs to keep the surface smooth and even. An interlocking rubber tile has within a few years been introduced for covering floors which are subjected to constant wear. This is very durable and is practically noiseless, but its unpleasant odor forbids its extensive use in the wards of a hospital, and it has never met with much favor.

A new substance known as lignolithic flooring, composed of saw-dust and wood fragments cemented together by a secret preparation, and applied to the floor in a continuous sheet, and afterwards rubbed down to form a smooth surface which can be waxed and polished like an ordinary parquet floor, has recently been employed as a flooring for large wards in some hospitals. It has the defect of showing stains, and after a little use presents a mottled, untidy appearance. The fragments of wood which enter into its composition disintegrate under wear, and the surface sooner or later presents a roughened, worm-eaten appearance. If the material cemented together were of the same degree of density as the cementing substance, so that the surface would wear uniformly, a flooring of this character would be an ideal one. The surface is bright and pleasing to the eye when it is first laid down, and there are no cracks or grooves, as in an ordinary wooden flooring, to gather dust or to retain infection.

The best form of flooring at present available seems to be little squares of compressed cork. It is elastic, non-absorbent, and practically indestructible. The material, however, has not yet been sufficiently tried, and disadvantages at present unknown may develop after prolonged wear.

If wooden flooring is used, Southern pine, quarter-sawn and properly put down, is undoubtedly the best material to use. Maple and oak, however, if carefully selected and properly laid, are also serviceable. All wooden floors, however, from constant wear and constant rubbing, soon become splintered, and are expensive to keep in repair.

Walls.—The walls of a ward should be plastered and painted, or, if economy is not an object, they should be covered with a glazed brick, carefully laid. Encaustic tile is not well suited for the walls of large rooms. Class rooms, laboratories, water-closets, bath rooms, sterilizing rooms, autopsy rooms, and dispensary rooms should have the walls covered with glazed brick.

Chutes for Clothing.—It is not advisable to provide dust flues for shooting down sweepings and garbage to the basement, because they inevitably become unhygienic and breeders of vermin, if not nests of actual disease. Chutes for the disposal of soiled clothing, also, should not be constructed of brick, nor should they be rectangular in form and of large size, because of the difficulty of keeping them clean. They should, on the contrary, be round metal tubes, one, at least, for each ward, with smooth interior surfaces, every portion of which can be



THE BRICKBUILDER, 1800.
 DECEMBER, 1900.

cleansed and disinfected, through which all soiled clothing can be shot to the basement as soon as removed from the person or bed of a patient. By an arrangement of metal receptacles at the termination of these chutes, it is possible to reduce the possibility of contaminating the building by soiled clothing to the minimum. All refuse, whether from the hospital wards, the laboratories, or the kitchen, should be destroyed daily by fire.

SUBSIDIARY BUILDINGS.

Dead House and Accompanying Laboratories.—The dead house should give accommodation to a large morgue for the reception of patients who die in the hospital. In close proximity should be an autopsy room for the study of gross pathological appearances after death. Attached to the autopsy room should be a room for the bacteriological study of body fluids, and another room or rooms for the study of pathological conditions in body tissues by means of frozen or hardened sections under the microscope. For convenience, also, rooms for the study of surgical and gynæcological pathology should find a place in this building. A room should be provided for the permanent keeping of pathological specimens and other similar objects of interest. It is extremely desirable that a mortuary chapel for funeral services over the remains of patients who have no homes in the city, and a waiting room, be provided in connection with the dead house. If the hospital is a part of a medical school, or furnishes clinical facilities for a medical school, there should be in addition rooms for teaching, such as an amphitheater for autopsies and a large class room.

Clinical Laboratory.—In addition to the small rooms for microscopic study in connection with each ward above mentioned, a general clinical laboratory should be established for the clinical study of body fluids, fæces, the blood, etc. It is desirable that such a clinical laboratory be situated in a building convenient to the wards but especially devoted to this work.

Nurses' Home.—This building should be separate and wholly distinct from the other buildings of the hospital. It should contain sleeping and sitting rooms for nurses, reception and study rooms, and all conveniences for cooking and serving food within its own walls. Each nurse should have a private room, and special provision should be made for bath rooms and toilet rooms. The dining rooms should be large and airy. The rooms set apart for the use of night nurses should be especially arranged to give quiet and seclusion, so that sleep may be practicable during the day-time.

Kitchens.—The kitchens should be in detached buildings open to the roof, and the false economy of placing employees or servants in the upper stories of a many-storied kitchen building should have no place in hospital construction. The floors of the kitchen should be constructed of vitrified tile, and the walls should be of glazed brick. The room designed for steam cooking should be separate from the main kitchen, and the steam room and the kitchen proper ought to be forcibly ventilated by a blower fan of sufficient capacity to change the air of the kitchen at least once in five minutes. The rooms for the preparation of vegetables should adjoin the kitchen, as also the diet kitchen and rooms for cold storage and refrigeration.

The Warehouses at Cupples Station, St. Louis, Mo.

EAMES & YOUNG, ARCHITECTS.

THAT architecture is an expression of the civilization, of the history, of a period, or of a race is as true to-day as it was in ancient times, and is as excellently illustrated in a group of modern warehouses as in an old Greek temple.

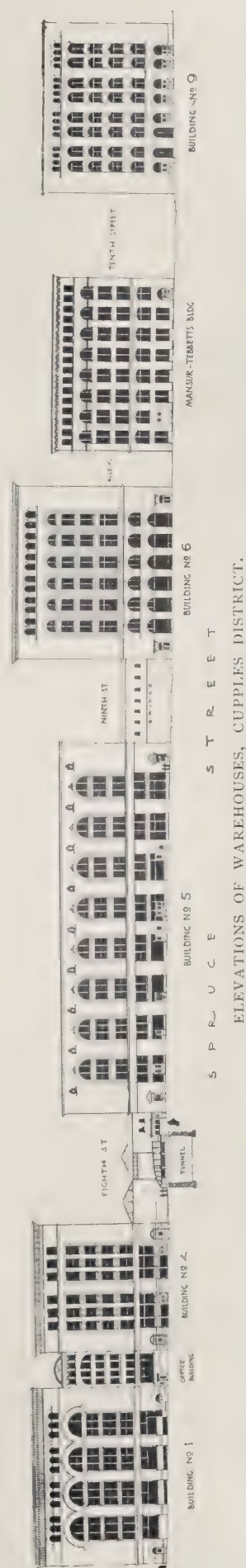
In the case of the temple, the study of this expression is simple. Creations there are so largely a matter of religious association; forms are so fixed by canon or custom, that the slight changes due to different materials in different periods can readily be traced.

But modern conditions are so varying, and detail has come to depend so much upon the personal taste of the architect, that the student must look to the changes in the history and development of our country itself quite to understand the present form of some of its characteristic buildings. Although in matters of detail, indeed, precedent has been sought, we have on the whole met our architectural conditions as frankly to-day as the temple builders met theirs long ago; and our buildings are as characteristic of our times as the temples are of the times in which they were constructed.

In St. Louis, Mo., there is a case in point where the architectural expression of the commercial history of the country is well illustrated in a group of buildings lying in a portion of the city, which ten years ago was in a ruinous condition of decay, but which has now, through them, been transformed into a prosperous center of activity, where business operations amounting to millions of dollars are daily conducted.

This new business quarter has become known as the Cupples District, from the name of the principal owner.

At the conception of this enterprise, the wholesale trade



was in the hands of individual firms scattered over a great area, each keeping up a large force of men and teams engaged in the transfer of freight between the stores and the various railroad termini and the river front.

Mr. Cupples and his associates saw that a great saving in operating expenses might be effected by concentrating a number of large shipping houses at a point convenient to the railroads, thus doing away with the necessity of drayage, except for local business. It was found that the saving in this item of expense, and the decreased cost of insurance, consequent on the occupation of a better grade of buildings, would pay for the extra cost of same, and leave a handsome profit for the owners. Naturally the advantages offered of modern equipments at reduced rent were effective in producing a hegira to the new district, and tenants were at hand in nearly all cases before the buildings were well begun.

The project as executed is not to be considered as a single architectural composition, for the various warehouses were planned and built from time to time as the demand for occupancy increased. For the purpose of

this article, the buildings are numbered in the order of their construction. Referring to the Block Plan (Fig. 1)

it will be seen that the buildings adjoin the yards of the Bridge and Terminal Company, which give direct connection with all railroads entering or leaving the city. From the yard switches spurs are laid, leading directly into the basements of the various buildings. All incoming goods are unloaded directly from the cars to shipping platforms connecting with the elevators

of the various stores, and thence distributed to the upper floors.

Directly over this platform is a second one (Fig. 2), on which outgoing goods are handled, sorted, and at the proper time dropped by elevator to the lower level, and loaded directly into the cars.

Some of the more distant buildings are connected with this central shipping platform by means of bridges spanning intervening tracks over which goods are trucked, or conveyed by moving platforms. The moving of goods is not done by the individual firms, but by a separate company, who have reduced it to a system,



CUPPLES DISTRICT, GENERAL VIEW.

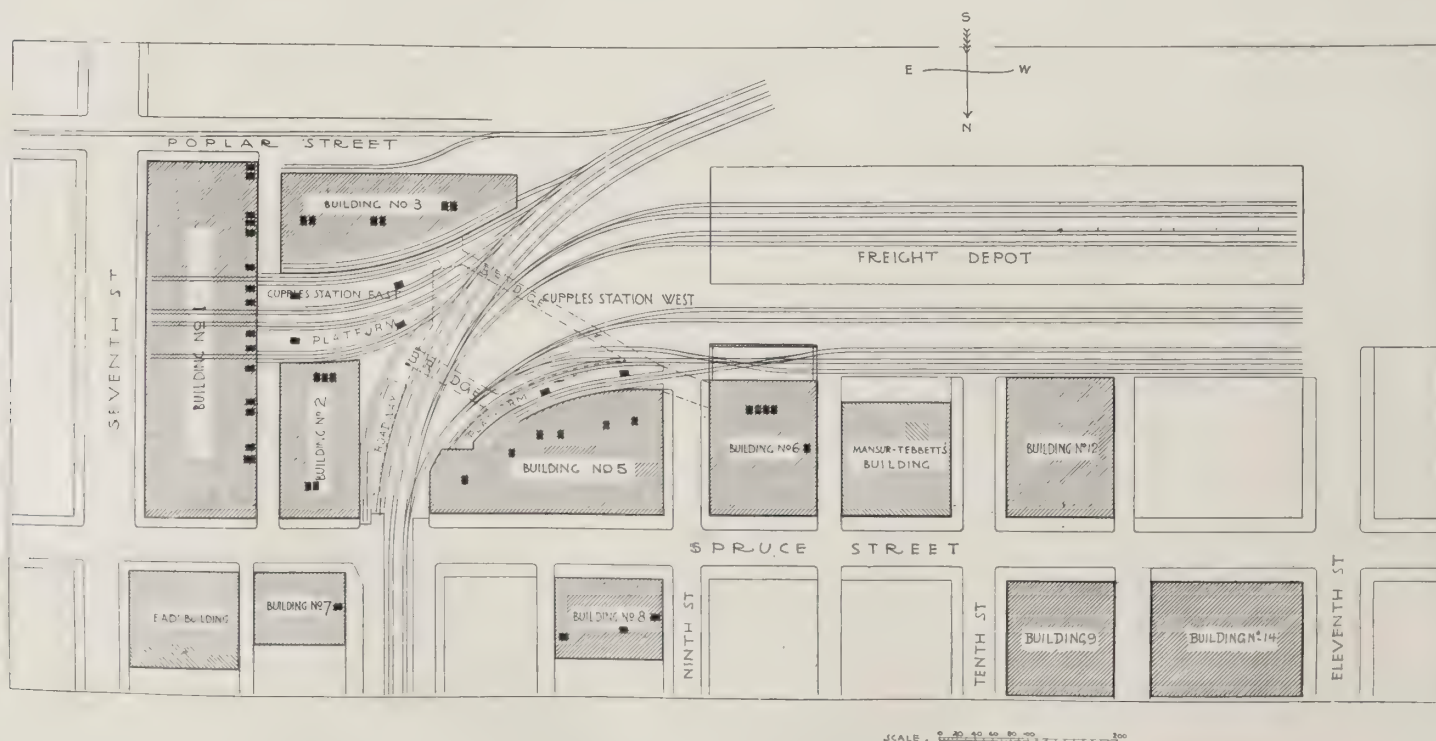


FIG. 1. BLOCK PLAN, CUPPLES DISTRICT.

thus avoiding unnecessary confusion, this service being paid for by each shipper, according to the volume of freight handled.

The buildings are all of heavy standard, slow-combustion construction, except such portions of the basement as are entered by railroad tracks, which are wholly fire-proof, and the shipping platforms, which are of steel construction. The necessity for bringing many of the trucks into the buildings on a curve gave rise to many complications in construction, the solution of which furnished ample scope for the exercise of the highest ingenuity in structural design.

One of these is shown in the curious truss form, seen on the upper shipping platform (Fig. 2), where the posts spaced on curves below, support the regularly spaced timber construction of the upper stories.

The power-house, controlling all the heating and lighting, and doing service for seventy-four elevators, is of especial interest to the engineer, as is also the fact that these elevators are run by a high-pressure hydraulic system, operated by one service pump. This pump is automatically controlled so as to act the moment pressure is reduced by the use of a single elevator.

So far as concerns exterior expression, it will be seen that the group has not been treated as a single architectural composition. At first it was intended to use throughout the motive shown in Warehouse No. 1 (Fig. 3), but it was found that the larger tenants, especially, desired to retain their individuality as much as possible, and because the varying requirements of each business installed necessitated such modifications, this idea was abandoned, and each building independently designed.

The largest of the buildings, Warehouse No. 1, occu-

pies an entire city block, and is more than 400 ft. long. It is six stories high, divided into base and cornice by horizontal bands. Vertically it consists of ten central round-headed bays, terminated by broad pieces pierced by coupled end bays. The vertical lines of these pieces



FIG. 2. UPPER LEVEL SHIPPING PLATFORM, SHOWING TRIANGULAR TRUSSES IN BACKGROUND.

are carried through the basement story, giving a satisfactory base and ample light.

The frieze is filled with a series of small round-headed windows grouped over the large bays below. The springing line of the arches is carried through, and a large corbeled cornice crowns the whole.

A local point of interest is the corner entrance. There the weakening effect that would naturally be given to the pier by piercing a door through it is overcome by band-courses.

In spite of the network of telegraph wires surrounding it, and the optical distortions they produce, the façade of this building has great dignity.

Up the street to the right of Warehouse No. 1 is the



CUPPLES STATION BUILDINGS FROM REAR.



FIG. 3. WAREHOUSE NO. 1.

next largest building of the group. This warehouse, known as Warehouse No. 6 (Fig. 4), is flanked on both sides by smaller buildings.

Here an attempt is made to group the openings more closely by means of sill-courses; the pier space at either end is quite unbroken. The basement is marked by a strong line, above which is a sill-course joining the six main bays. Similar sill-courses connect the smaller windows of the frieze and the second story of basement windows.

This building, No. 6, has a much sturdier expression than Warehouse No. 1. The high basement and the smaller cornice concentrate the interest below. The cornice consists of a few courses of corbeled brickwork, crowned by a flat projecting band.

Altogether the building is a well-studied attempt to gain an effect by simple means. All that can be called ornament is a series of offsets forming the jambs of the main windows, and giving, as can be seen on the side, the effect of a deep reveal.

The scale of the structure is excellently planned, and

the exceptional instance of façade and sides, treated alike, gives a dignity that many buildings not called warehouses might very justly envy.

The buildings are, in general, of the familiar "aqueduct" type, — that is, having a series of large arched openings supporting a smaller story of narrow arches. These small openings are grouped, in some buildings, over the axes of the larger ones; in others they are spaced at equal distances across the façade.

In Warehouse No. 5 (Fig. 5) the windows are very large and are divided by mullions; the bays are three stories high, each with round arch and molded architrave. The crowns and springs of the arches are ornamented, and in the spandrels between the arches are hung great terra-cotta shields.

There is, however, no frieze or attic; the composition is just two stories, of which the more important is termi-



FIG. 4. WAREHOUSE NO. 6.

nated by a cove formed of slightly projecting brick courses.

The chief interest in this building lies in the use of color. The bays and panels between the windows are of a light brown or yellowish brick, making a decided contrast against the dark-red body of the building. The large shields, again, are darker than the wall.

But notwithstanding these spots of ornament, the shields, the cornice still appears too thin. Where no frieze is used, one feels the need of a huge projecting cornice, like those in the Florentine palaces, for instance.

In all these buildings simplicity of treatment and a sparing use of ornament show to what good effect intelligent study and taste can be brought to bear upon even so commercial a problem. Little attention, however, has been given to the grouping of the district as a whole; and the opportunity for a consistent sky-line is lost in consequence. But the peculiar growth of the district probably rendered such grouping impracticable.

These eighteen buildings, all the work of Messrs. Eames & Young, are not only triumphs of commercial architecture, but are, as well, unusual engineering and



FIG. 5. WAREHOUSE NO. 5.

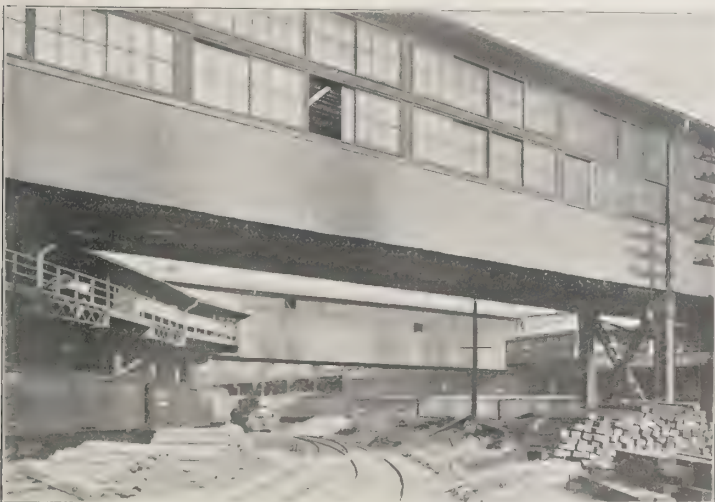
practical achievements. As was already touched upon, their total floor area is nearly 2,000,000 sq. ft., and their cubic contents upward of 30,000,000 cu. ft.



ALLEYWAY BETWEEN BUILDINGS 1, 2, AND 3, COMMUNICATING WITH SHIPPING PLATFORM.

CLAY IN MODERN BUILDING.

THE use of burned clay in nearly all classes of modern building construction is to-day more extensive than at any time in the history of the building trades, and there are many reasons which indicate that its use is destined to increase greatly in the years to come. In all the varied forms in which the substance is thus employed its abundance makes its use a matter of economy, and at the same time it is the most efficient material obtainable, and has a wonderful adaptability to the varied building uses. As to its ability to withstand climatic conditions



REAR VIEW OF SHIPPING PLATFORM, SHOWING CONNECTING BRIDGES.

there has never been any question, for no better material for resistance to heat and cold is obtainable. Like all other building materials, in the hands of ingenious craftsmen, clay is directed into many different channels of usefulness. Its strength is not to be questioned, and all kinds of burned clay are readily beautified in form and color. To-day brick architecture may well be regarded as the foremost feature of building construction from an æsthetic point of view, as well as from a practical and economic one. *The Builders' Journal, London.*

Fire-proofing.

THE NEW YORK FIRE INSURANCE EXCHANGE SCHEDULE.

IF there were any lingering doubt as to the efficacy of the fire-resisting methods and materials which this journal makes a special object of advocating, it would be quite dispelled by an examination and analysis of the Schedule published by the New York Fire Insurance Exchange. The Exchange represents some of the largest interests in the country, and its affairs are directed by a body of men without sentiment or fancy, who consider building from the cold, matter-of-fact standpoint of dollars and cents, and who weigh in an absolutely impartial manner the value and the defects of the different materials and methods of construction which enter into a large building. A fire loss or damage is really about the only eventuality which a thoroughly well-equipped, modern, commercial structure has to fear, and experience has abundantly demonstrated not only that all so-called fire-proof constructions are not entirely exempt from danger, but that even the best of them must be most carefully safeguarded, and the liability of a fire doing very extensive damage in a large office building is one which is constantly before us, owing, however, not to the construction so much as to the nature of its contents, its arrangement, etc. Such liability is discounted to a very considerable extent, from the owner's standpoint, by fire insurance, but the judgment of the body of men who define the measure of the risk involved in such discounting of chances is certainly something which is worthy of receiving the fullest consideration.

The most striking feature of the schedule of the Exchange, from our point of view, is that which relates to floor arches. For those who are not familiar with this schedule, we will say that a key rate is arbitrarily established as a basis for computation, this rate being ten cents per hundred in New York. Additions to this rate are made for certain specific methods or style of construction on the one hand, and percentage deductions are then made for certain excellencies, or compliance with certain established rules, and a final rate is thus established. This rate is in turn subjected to a further deduction on account of a practice which prevails of giving five years' insurance for a single payment equivalent to three years' premium. Under the item "Floor Arches," it is stated that "no additional charge is made, provided brick or segmental arches of brick or burnt clay are used." If the arches are of "concrete, cement, or approved plaster composition floor arches, with iron centers or supports," there is an extra charge of four cents, while for a "flat arch supported on iron" the charge is twice that, or eight cents, and if the space between floor beams exceeds 5 ft., for each foot in excess one cent is added to the rate, one half of the above charges, however, being applicable to office or hotel buildings. The schedule is quite specific in detailing the special forms of patented constructions for which an extra charge is made, and, indeed, we imagine that the representatives of these patent systems, all of which have received the distinct approval of the New York Building Department,

would naturally feel that the schedule was unpleasantly specific. Our own interest in the matter is that brick and terra-cotta are by this schedule acknowledged as being the very best for purposes of fire protection.

Under the item of "Unprotected Iron," a charge of ten cents is noted for unprotected cast-iron columns, while for unprotected wrought iron or steel the charge is fifteen cents, and it is particularly noted that columns filled with cement are considered dangerous. This raises a point upon which the best experts are not in accord. Unprotected cast iron will undoubtedly stand a greater amount of heat without dangerous deflection than wrought iron or steel. At the same time, it seems to us unfair in this respect, for even granting the relative weakness of wrought iron against fire, its greater rigidity at the joints, and the greater ease with which it can be wrought into first-class shape for all emergencies, lead to a better building in results, and this the insurance people do not apparently take into account. As to the danger from filling the columns with cement, it is hard to see just wherein it lies, and at best the danger seems to us an academic distinction rather than a practical fact.

Under the item of "Walls," we find that skeleton construction, when composed of wrought iron and steel, involves a charge of two cents, while there is no charge made for cast iron. Here again we believe an injustice is done to what is really the better method of construction. Also, for an average thickness for two-side or bearing walls, or either of them, less than 20 ins., the charge for each inch of deficiency is one cent, or double this amount if any portion of the wall is less than 12 ins., though the proviso is made that if the wall is built according to the New York Building Law no charge is made. The height of the building also very seriously affects the rate of premium. For every story above eight and up to twelve, the charge for an office building will be one quarter cent per story, but when the building reaches the height of thirty-three stories, which has been attained by one of the recent New York structures, the maximum increase in rate would amount to nearly fifty cents. This is a pretty high tax on a tall building. We may justify it only by the present existing difficulties in pumping water to the upper stories in case of emergency.

An investigation of this schedule, and the carrying out of the different charges, credits, and allowances made possible in a thoroughly first-class modern structure, gives a final rating of a little over seventeen cents per year per hundred, or on a basis of three premiums for five years' insurance, the rate would be a little over ten and one quarter cents per hundred. When it is reflected that the cost on this basis of a million dollars' insurance would be only \$1,027 per year, it will seem that after all, though some of the provisions are exacting, the result as a whole is a generous one. Indeed, the wonder is that the rate could be so low, and when we consider that these rates have been established as a result of long experience and most careful investigation of actual losses, we can only arrive at the pleasing conclusion that though our methods still are faulty and buildings are not fire-proofed by any manner of means to perfection, at the same time the amount of real protection against ultimate loss is very great, and that our fire-proofing methods have arrived at a very high degree of perfection.

Selected Miscellany.

NOTES FROM CHICAGO.

The usual inactivity still prevails at the new Post-office building. To this fact the following paragraph from the *Chicago Daily News* bears testimony:—

"‘Friend,’ said the medical student, cautiously, ‘is there a skeleton in Chicago that any one wishes to get rid of?’"

"‘Yes,’ said the citizen, ‘take the new post-office. We would be glad to get rid of that skeleton at any price.’"

The Architectural Club has offered its services to the city in the designing of shelters and enclosures for five



HOUSE, NO. 8 EAST 75TH STREET, NEW YORK CITY.
Lord, Hewlett & Hull, Architects.

public playgrounds, for which provision has recently been made by ordinance, and has delegated the work to Messrs. Perkins (member of the Park Commission), Llewellyn, Spencer, Holsman, Frank Garden, Fellows, Long, Watson, and Lilleskau.

Although the appropriation is very small, the problems presented are interesting, and it is important that good design offset the limitations of crude and simple materials.



STAIRCASE, HALL.



HALL, LOOKING DOWN CORRIDOR.



DINING ROOM.



LIBRARY.



DEN.



DINING ROOM.

INTERIORS, HOUSE AT TUXEDO PARK, NEW YORK.
R. Clipston Sturgis, Architect.

A most beautiful and unique example of terra-cotta work has just been completed at Bellevue Place, a small triangular piece of ground at the intersection of Rush and North State Streets. It is the shelter and fountain designed by Birch Long, and accepted by the Womans' Club, as a result of a competition held last year by the Architectural Club.

For the first time in local architectural history, glazed terra-cotta has been used, in which rich polychromatic

effects have been obtained. And this has been done with such marked success, that even the famous Della Robbia pieces seem raw and crude in respect to delicacy, softness, and modulation of color. The design is as refined and original as the craftsmanship, and should prove a valuable object-lesson to the community in the possibilities of a modern architecture suited to modern and local materials, adorned with decorative forms derived from the plants which grow in our fields, forests,



VESTIBULE, CHURCH OF THE SACRED HEART, NEWTON CENTER, MASS.

W. H. McGinty, Architect.

g the use of Faience in conjunction with marble. The Sienna marble panels are framed ornamental band of Faience in two colors. The cornice and upper course are in buff, and are in two shades of green Faience. Grueby Faience Company, makers.

and ponds. Chicago, the young designer, the terra-cotta maker (American Terra-cotta and Ceramic Company) and the Womans' Club are all to be congratulated on this happy result.

Mr. C. R. Ashbee, of London, the well-known architect and Arts and Crafts leader, has recently spent several weeks here studying Chicago as an art center, and trying to organize a branch of the National Trust for Places of Historic Interest or Natural Beauty, an organization which has already accomplished much in England for the preservation of old buildings and other objects of historic interest, and in preserving the beauty of natural scenery.

DETAIL, BY BARNEY & CHAPMAN, ARCHITECTS.
New York Architectural Terra-Cotta Company, makers.

Owing, perhaps, partly to his very blunt way of characterizing Chicago's ugliness, dirt, and disregard for art, and partly to silly sensitiveness on the part of some of the city's well-meaning but misguided defenders who left Fullerton Hall during Mr. Ashbee's talk on the need of affiliated organization in America, no very definite action has yet been taken toward the formation of a local organization; but enough has been done, however, to insure something of the sort in the near future. Possibly

the work may be taken up by the Architectural League, and the American Park and Outdoor Art Association in cooperation.

NOTES FROM PITTSBURGH.

Most of the Pittsburgh architects report that the dull times of pre-election days are still continuing, but all seem confident that the coming year will be a busy one.

Mr. Carnegie's visits to Pittsburgh are far between, but for several years they have been coincident with the announcement of splendid gifts to the city. A year ago he promised to build the large addition to the Carnegie Institute; this year he has announced that if the city will provide a site, he will build a large technical school, and endow it with \$1,000,000.

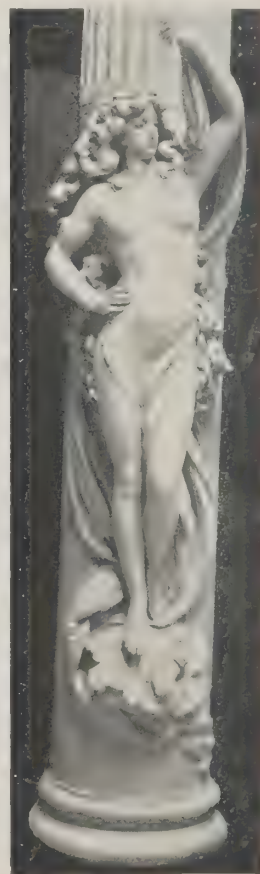
The matter is already before councils, and Pittsburgh will, no doubt, act differently than another Pennsylvania city which has just refused an offer of Mr. Carnegie to build a library, on the ground that the yearly addition of \$3,000 to the taxes would be burdensome.

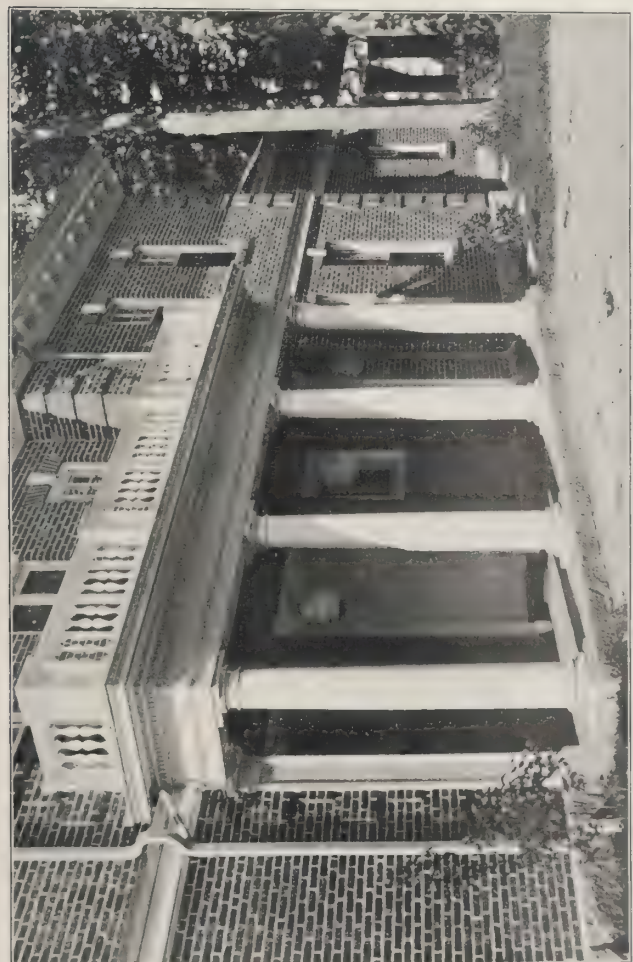
A Carnegie library is soon to be begun at Duquesne, Pa., to cost \$300,000; Alden & Harlow are the architects.

The property across from the court-house on Grant Street has just been purchased by Mr. H. C. Frick, who will build a twenty-story office building there; D. H. Burnham & Co., architects. The building is to be set 10 ft. back from the building line on Fifth Avenue, to give a wider sidewalk, and also not to obstruct the view of the court-house. Considering the loss of floor space and revenue, such a public-spirited act is indeed praiseworthy.

NOTES FROM ST. LOUIS.

The high figures received for work placed upon the market during the past eighteen months, and which has been the cause of some very important work being abandoned, is attributed to an agreement that seems to exist between contractors, sub-contractors, and material men, that each bidder add to his proposal a percentage to be divided with the unsuccessful bidders in case the contract is awarded; that only invited contractors shall submit bids, that

COLUMN, BY WILLIS
G. HALE, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, makers.



HOUSE FOR WINSTON CHURCHILL, MONTPELIER, VT.

Charles A. Platt, Architect.



PANEL, BY KEES & COLBURN, ARCHITECTS.

Winkle Terra-Cotta Company, makers.

Further evidence of unnatural conditions prevailing is found in the records of the Building Commissioner, which show that there has been less building done in the city during the first ten months of the year than during any similar time since 1888, not excepting the years of the panic.

It was hoped that the success of the World's Fair amendments, which were approved at the recent election, would cause a revival of business; but a constitutional amendment, which was adopted at the same time, taxing mortgages, deeds of trusts, etc., promises to become an element of uncertainty which may further delay important improvements, causing timidity in the investment of foreign capital, if it does not occasion its withdrawal from the State altogether.

IN GENERAL.

The Cincinnati Chapter of the American Institute of Architects held its regular monthly meeting, Tuesday, Nov. 20, 1900. The following officers were installed for the ensuing year: President, G. W. Rapp; vice-presi-



PANEL, NEW JERSEY TERRA-COTTA COMPANY, MAKERS.

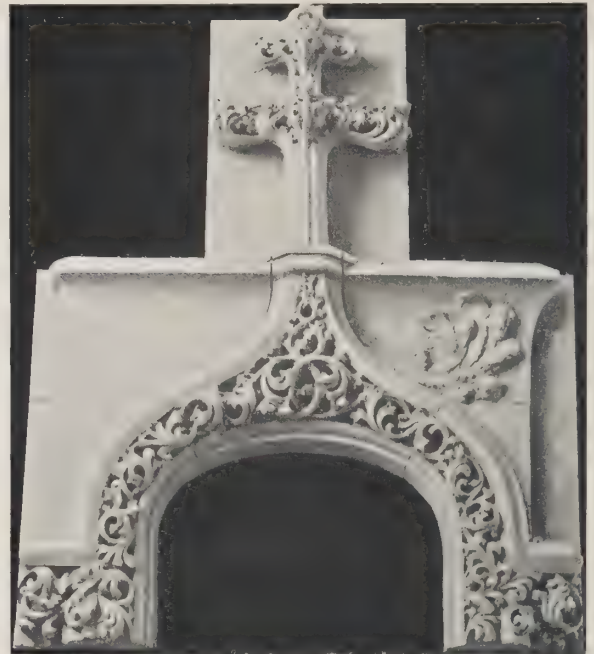
dent, A. W. Hayward; secretary, George M. Anderson; treasurer, George W. Rapp. A program of the papers to be read during the winter was distributed. Messrs. Rapp, Drach, and McLaughlin, were appointed delegates to the Convention of the American Institute. Mr. Samuel Hannaford read an interesting paper on "Contracts," which was followed by a general discussion.

Ingle & Almirall, architects, New York City, announce the termination of their partnership, December 31. John W. Ingle will open an office at 109 West 42d Street, and Raymond F. Almirall at 10 East 23d Street.

W. B. Ittner spoke before the St. Louis Architectural Club on the evening of December 8, subject, "The History of World's Fairs."

George Oakley Totten, Jr., addressed the Washington Architectural Club on the evening of December 8, subject, "Contrast Between the Chicago and Paris Expositions."

Theo. F. Laist lectured before the Washington Architectural Club on the evening of November 24, subject,



DETAIL, NORTHWESTERN TERRA-COTTA COMPANY, MAKERS.

"A Trip to the Paris Exposition." On the same evening a paper was read on "The Composition of Staff," by O. S. Simmons, superintendent in charge of United States Government Building at the Pan-American Exposition.

Guy Lowell, architect, delivered an address on "Landscape Architecture in this Country," before the Society of Arts, Boston, on the evening of December 13.

The Architectural League, of New York, will hold its Sixteenth Annual Exhibition in the Building of the American Fine Arts Society, 215 West 57th Street, from February 17 to March 9, inclusive, and in connection therewith the following information will be of interest:—

Last day for reception of exhibits Wednesday, February 6, 6 P. M. Press view, Friday, February 15, 9 A. M. to 4 P. M. Annual dinner, Friday, February 15, 7 P. M. League reception, Saturday, February 16, 8 P. M. Public

exhibition from Sunday, February 17, to Saturday, March 9, inclusive. Hours: 10 A. M. to 6 P. M., 8 P. M. to 10 A. M., Sundays, 12 M. to 6 P. M. Public lectures, Wednesdays, February 20, 27, and March 6. Pay days, all



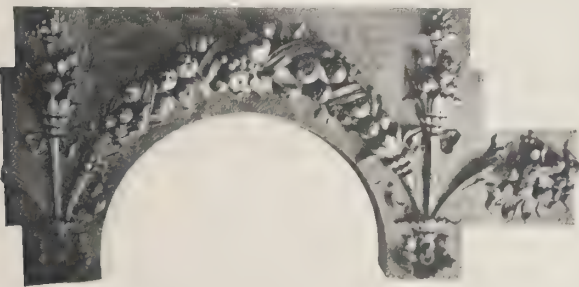
PILASTER, CAPITAL, GEORGE B. POST, ARCHITECT.
Atlantic Terra-Cotta Company, makers.

Tuesdays and Thursdays; admission 25 cents. All other days free. Exhibits discharged Monday, March 11.

MISCELLANEOUS ITEMS.

Gustave B. Bohm, architect, has opened an office in the Williamson Building, Cleveland, Ohio. Manufacturers' catalogues and samples desired.

"Ironclay" bricks, made by The Columbus Face Brick Company, will be used in the new Power House



DETAIL, BY E. O. FALLIS, ARCHITECT.
St. Louis Terra-Cotta Company, makers.

for the Manhattan Railway, New York City. This is said to be the largest power house in the world.

The new armory at Medford, Mass., Shepley, Rutan & Coolidge, architects, will be roofed with Celadon Roofing Tile; Charles Bacon, Boston agent.

Sayre & Fisher Company's brick will be used in the new building for the Central Wharf and Wet Dock Corporation, Boston, Peabody & Stearns, architects, and the new Huntington Chambers, Boston, A. H. Bowditch, architect. Charles Bacon, Boston agent.

The New Jersey Terra-Cotta Company has during the past few months completed the terra-cotta work on the following buildings: Paymaster's office, Navy Yard,



PANEL, BY FRED KEES, ARCHITECT.
American Terra-Cotta & Ceramic Company, makers.

Brooklyn; apartment house, Lexington Avenue, New York, George F. Pelham, architect; residence, Newark, N. J., Carl T. Rehman, architect; four apartments, West 112th Street, New York, Charles Stegmayer, architect; apartments, Newark, N. J., Herman Kreidler, architect;



CAPITAL, BY G. L. MORSE, ARCHITECT.
Excelsior Terra-Cotta Company, makers.

mercantile building, Broadway, New York, Clinton & Russell, architects; apartments, Livingston Place, New York, Michael Bernstein, architect; two apartment houses, West 71st Street, New York, Wm. H. Boylan, architect; apartment house, Lexington Avenue, New York, Charles Bradford Meyers, architect.

HARVARD BRICK.

SOME of the most delightful brick architecture left to us from the colonial period is represented by the older buildings of Harvard College, which date as far back as the latter part of the seventeenth century. The walls of these structures are in general laid up with the so-called Flemish bond. The quaint, texture-like appearance of these brick walls has pleased many architects, and led to the use of a rather simple form of selected common brick laid up with black headers for the bond. The buildings designed for use of this material were so generally satisfactory that in response to a demand for such material the brick-makers have been putting on the market for several years a form of brick known specifically as the "Harvard" brick, which is hard-burned, dark in color, with headers quite perceptibly darker than the



STATUE FOR ST. AUGUSTINE
CHURCH, PITTSBURGH, PA.
Rutan & Russell, Architects.
Perth Amboy Terra-Cotta Company, makers.



CARLETON BUILDING, ST. LOUIS, MO.

Theodore C. Link, Architect.

First four stories terra-cotta and Roman size brick. Upper stories of impervious gray brick. Made by the Hydraulic-Press Brick Company.

body of the brick. Its manufacture since has been taken up by several of the companies which have lately joined to form the New England Brick Company, for whom Pfotenbauer & Nesbit, St. James Building, New York, are the agents for New York, Connecticut, New Jersey, Pennsylvania, and Delaware. The brick has been used successfully by many architects throughout the country and rarely fails to prove satisfactory. The success of the Harvard brick lies in its peculiar rich red color, its character and great hardness, in addition to which as manufactured it is perfectly impervious.

ENAMELED BRICK TREATMENT OF SUBWAY CONSTRUCTION.

DRAINAGE OF SEEPAGE BRICK OF WALLS. PREVENTION OF DISCOLORATION OF ENAMELED FACING. BY J. FRANCIS BOORAEM, A. S. M. E.

BY far the most important use in large and heavy construction work for enameled brick is in that of subway construction. The work which has been done on the Boston Subway, till now the largest American subway, makes the review of two important studies of this work a subject of interest to engineers and architects.

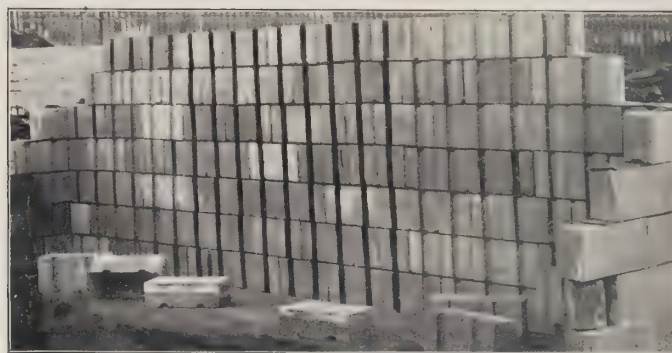
One of these, and the most important — although not the largest — is the treatment of the Scollay Square Station, a conspicuous feature of which is the use of white enameled brick on its north and west walls. Especially is this interesting when compared with the badly stained interior surfaces of the general subway, where the discoloring is so conspicuous as to completely obliterate in some places all the white enamel paint and other finishes applied at various points beyond the stations, and about which so much criticism is being made.

The object of the treatment of this station with a

clean, bright, white, and light-reflecting enameled brick was to insure a permanent whiteness, and to prevent sweating, which the particular conditions there required. To this end it was sought, first, to drain the moisture collecting at the back of the brickwork as seepage; second, to allow a circulation of air back of brick to maintain uniform temperature on the face and back of the brick.

The drainage of the moisture which percolates through the walls of a subway is a subject to which the construction engineer has to give attention for more than one vital reason, and should be considered and treated as follows, so far as it relates to enameled brick lining. The most important fact to be realized is that this moisture which contains various salts in solution, if allowed to soak through backing or body of the brick, would in time appear, on account of evaporation, in a solid, crusted form of stains, which would seriously mar the finished look of the work at the joints, and also appear as discoloration behind the otherwise pure white face of the enamel.

To avoid this the manufacturer, the American Enameled Brick and Tile Company, New York, by use of a design which was approved of by the engineer of the subway, and on which the company subsequently secured

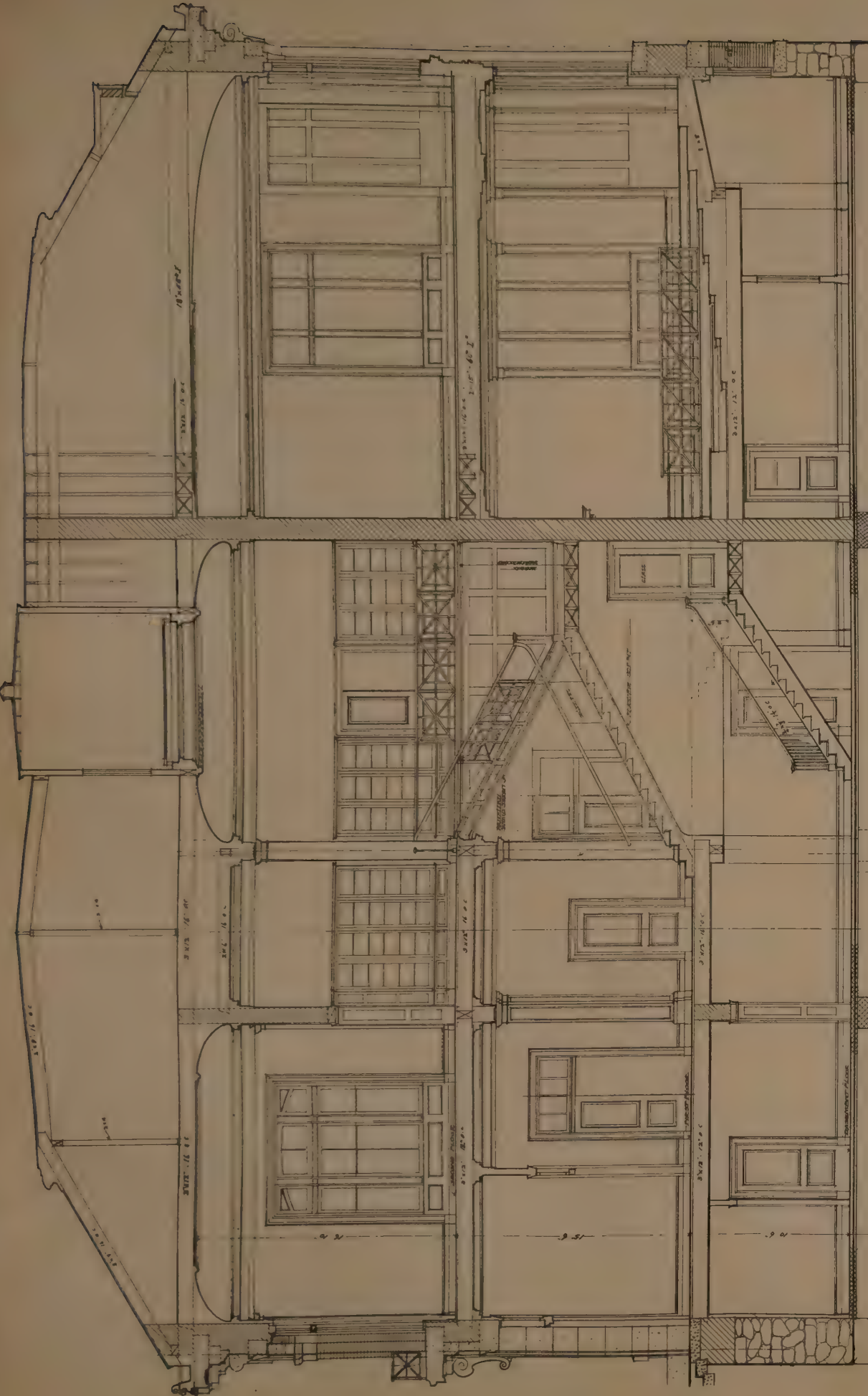


patents, succeeded in accomplishing the double purpose of draining this moisture away from the back of these enameled bricks so as to prevent its soaking through into the back of the enamel and destroying its whiteness as frequently happens, and further succeeded in making this part of the construction assist the other devices of the engineer to accomplish more fully the collection of moisture from the side walls of the tunnels, delivering it into the control of the artery-like system, already designed by him throughout the tunnel. To accomplish this purpose in other parts of the subway, the constructors were obliged to design an extraordinary system of drainage.

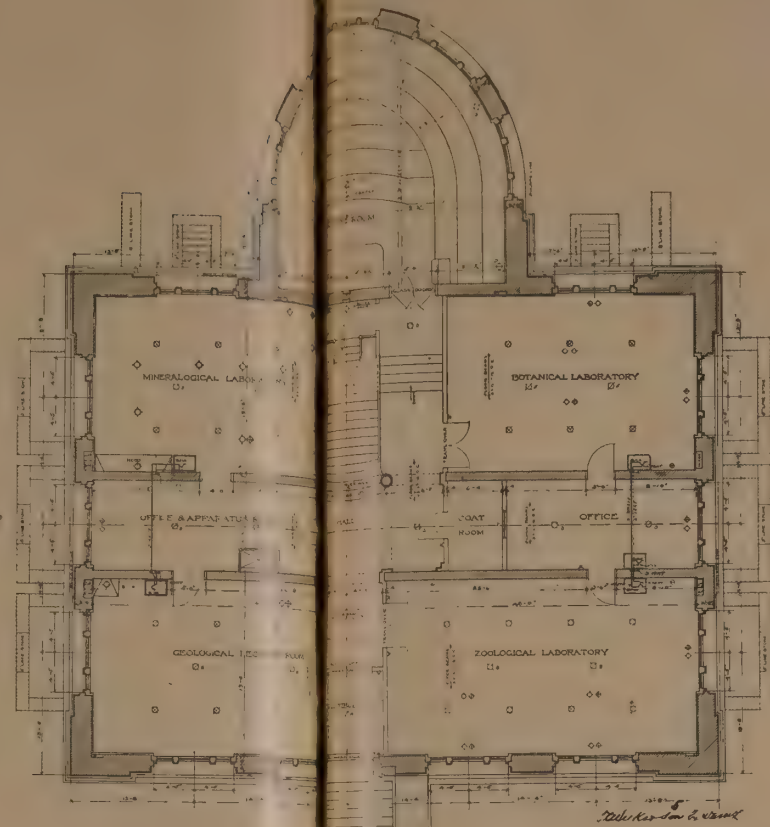
The prevention of sweating or condensation of moisture more or less naturally confined in the atmosphere of a subway, due to the rapid changes of temperature, or, to be more explicit, due to the fact that the air of tunnels in a falling temperature chills more rapidly than the body of the wall itself, had to be treated in a manner which would allow as free a circulation as possible with outside air, and still be consistent with the general construction design of the tunnel, and further admit of economy of space.

The same design which accomplished the *drainage of moisture* also gave free circulation of air behind the face of the enameled brick wall, and that, too, without the expense of setting hollow brick partitions behind the enameled brick, which, if used, could only have been done by narrowing the available space in the tunnel. The value of the work in fulfilling these important conditions can only be fully realized by study of the actual conditions met.

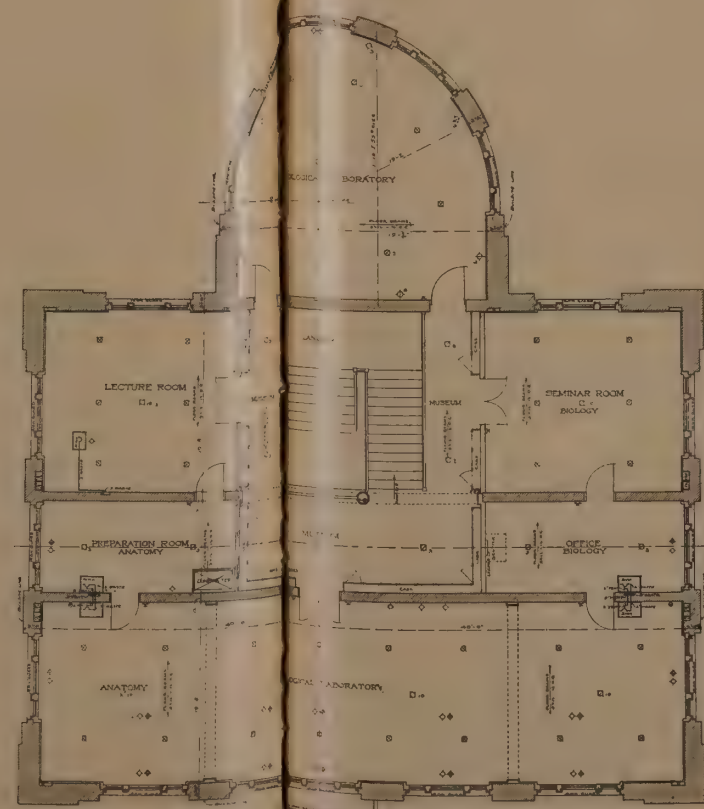
The designs and methods employed are controlled by the Company which executed the work under United States patents, held in the writer's name for the protection of their trade in subway work.



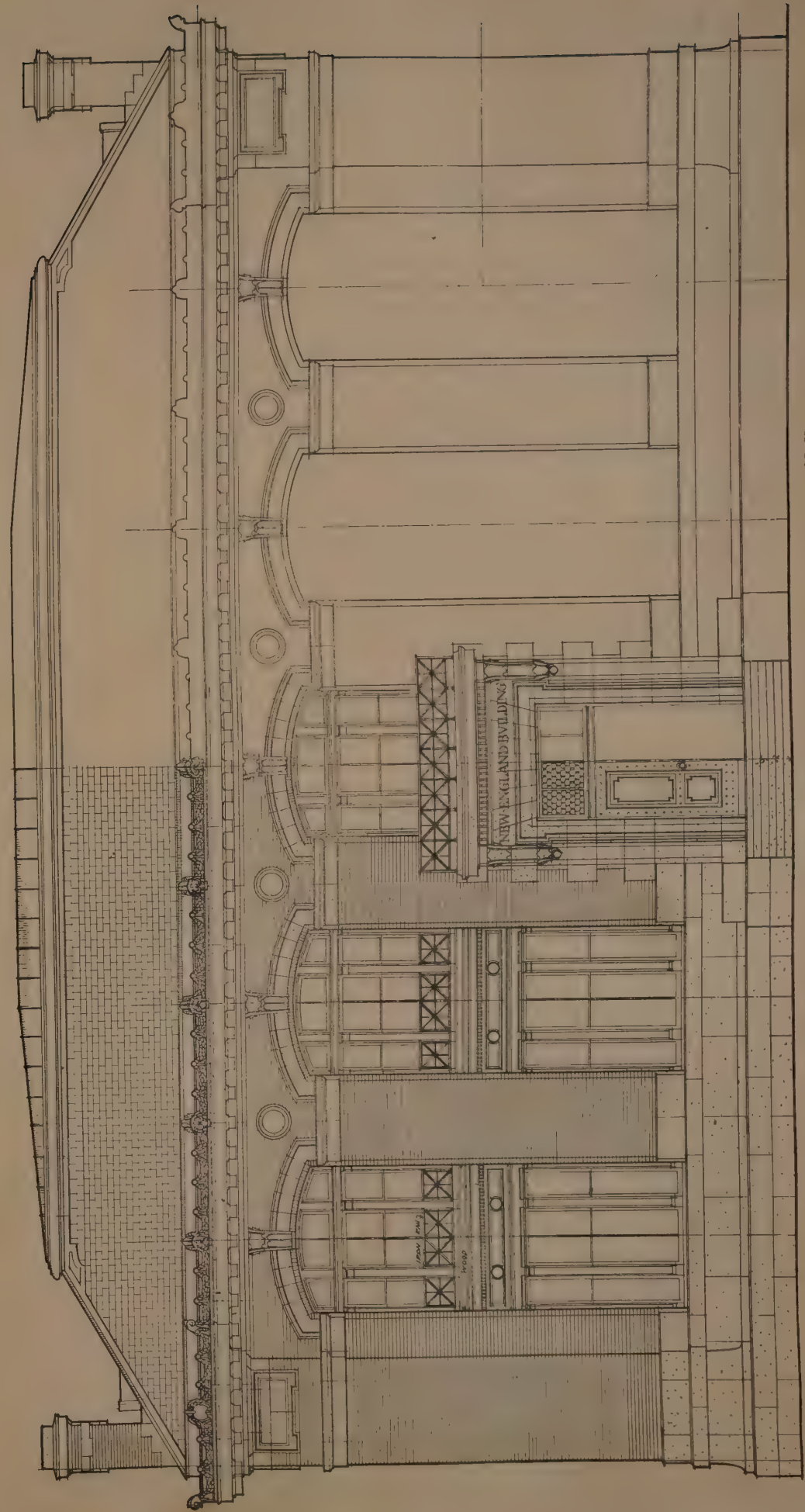
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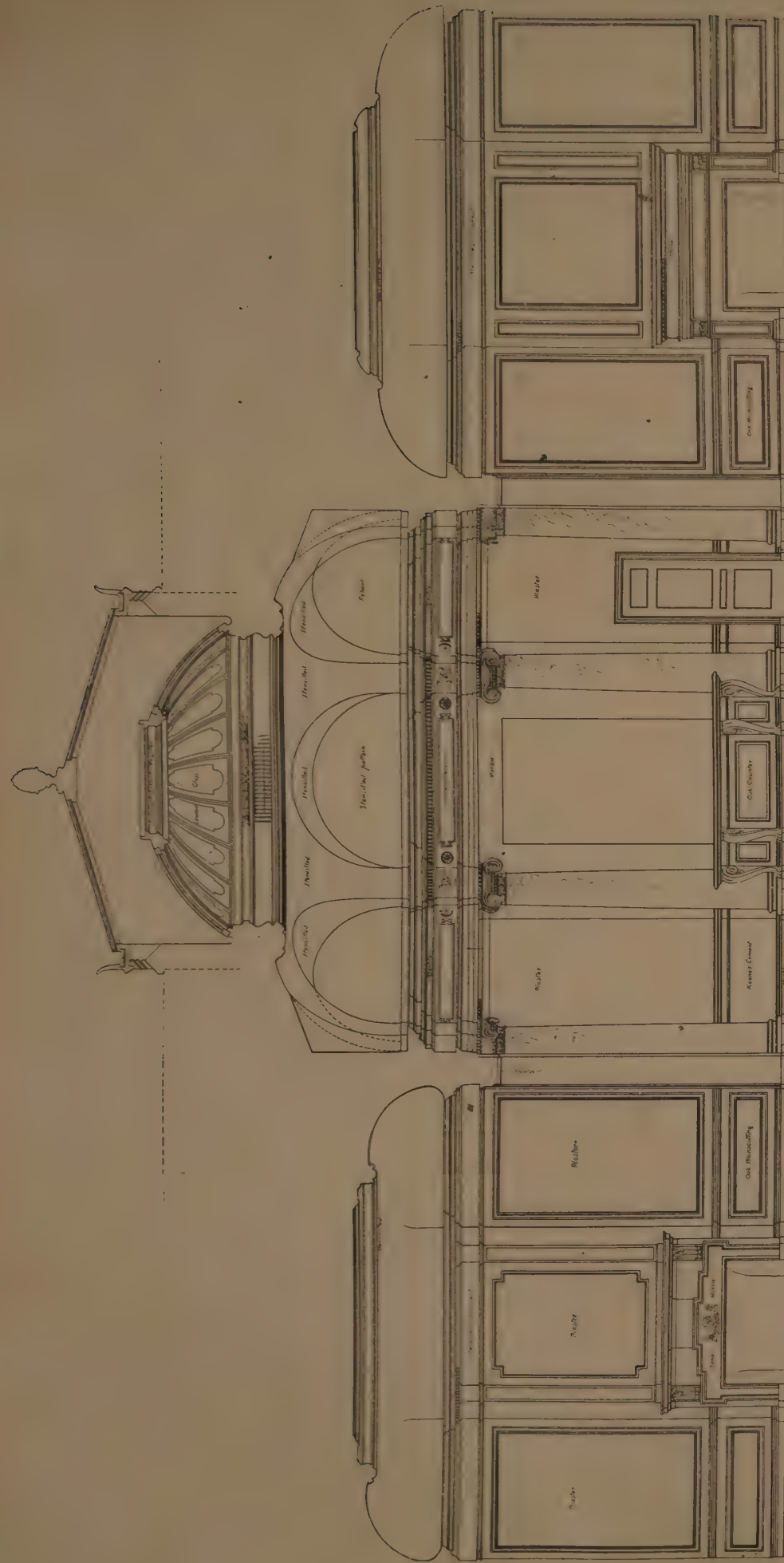


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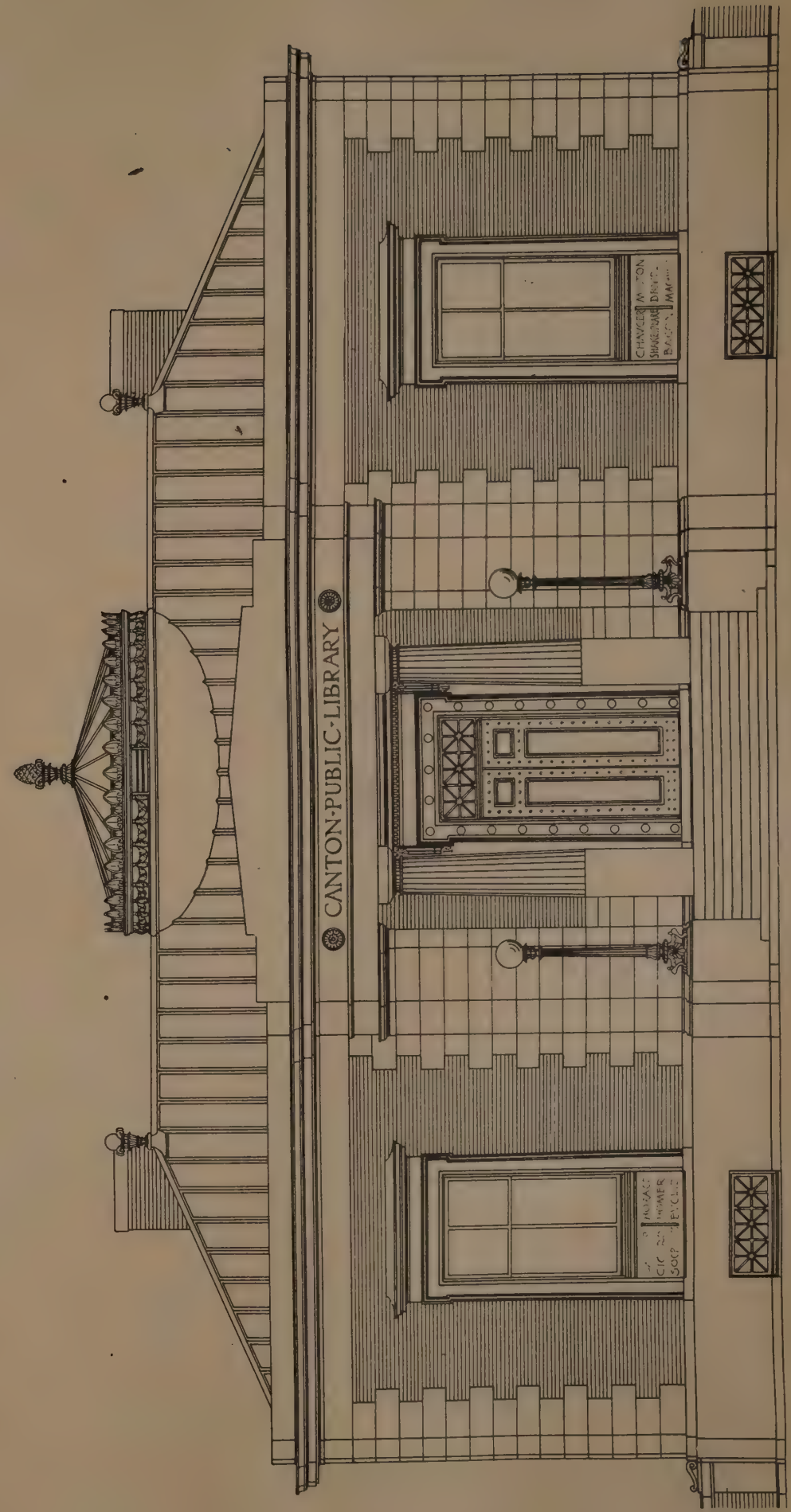
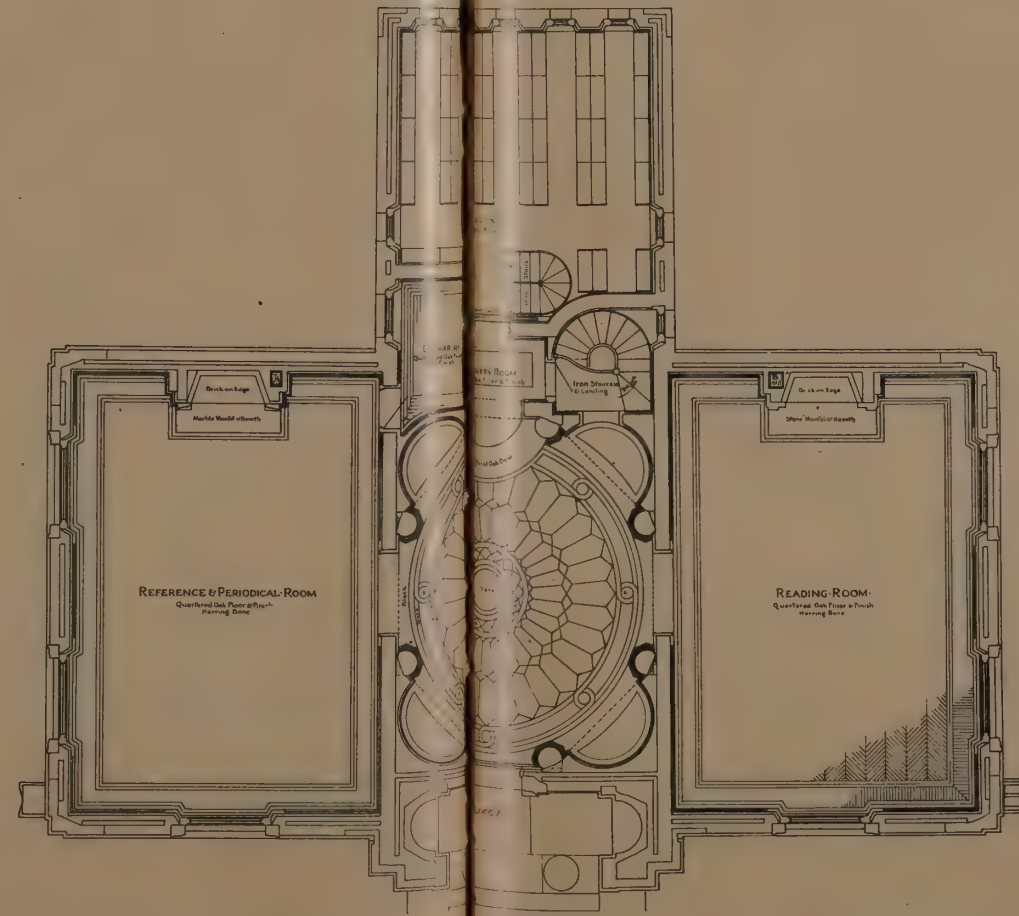


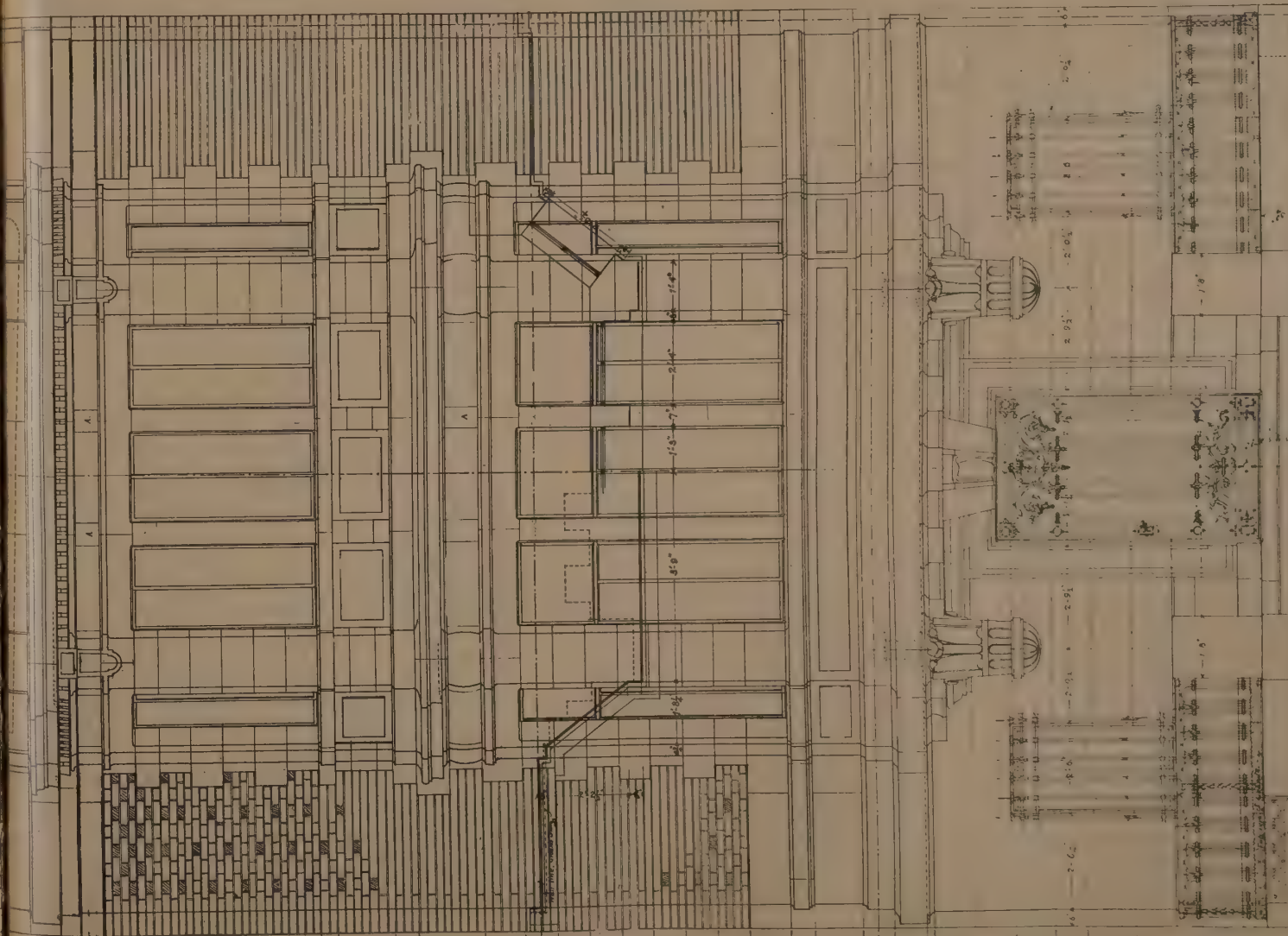
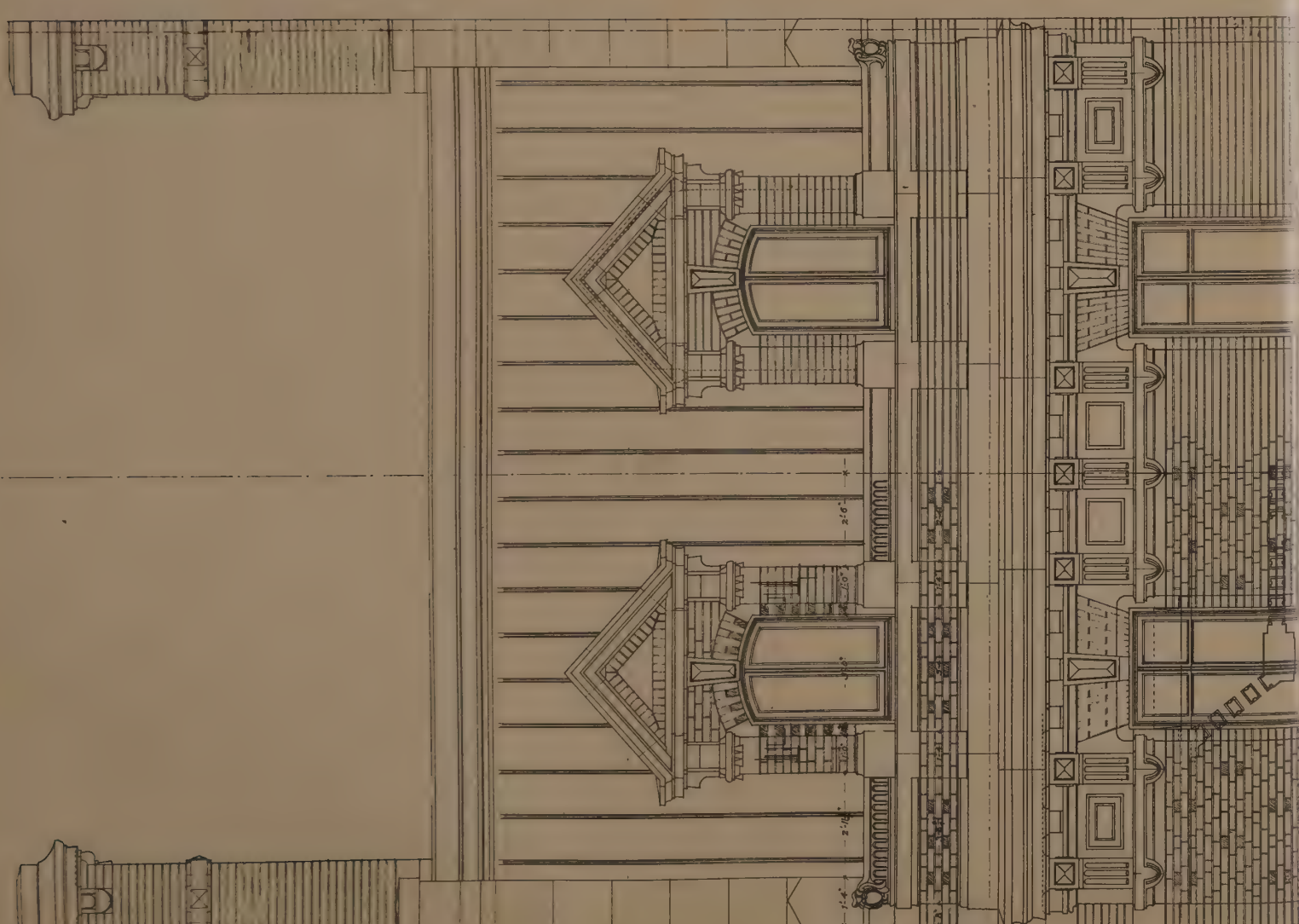
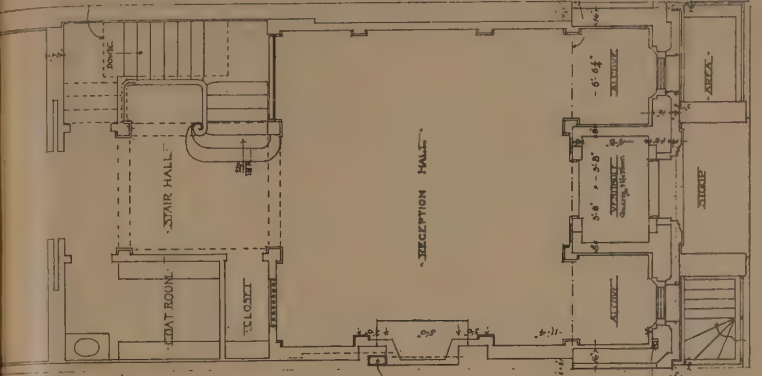
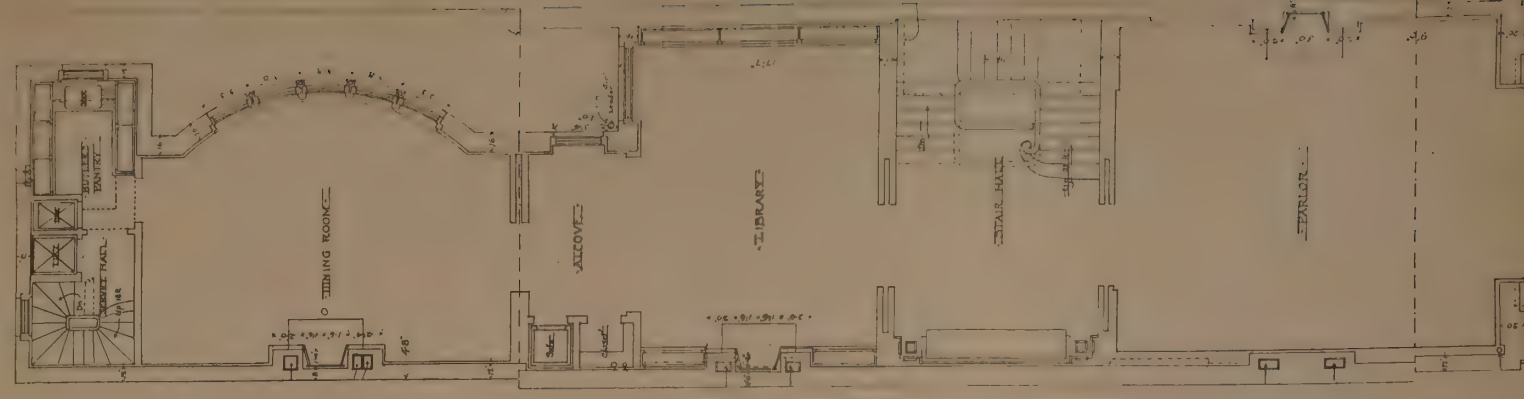
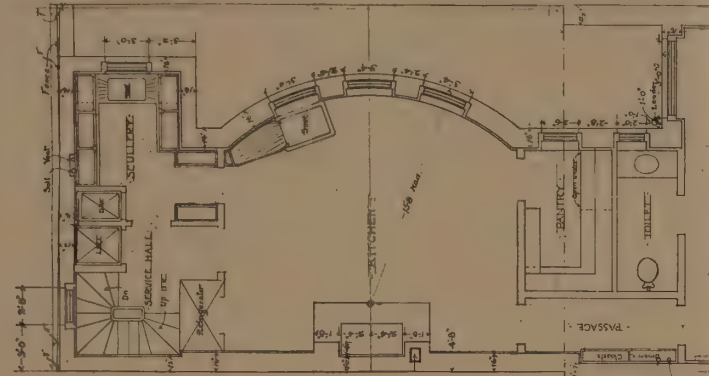
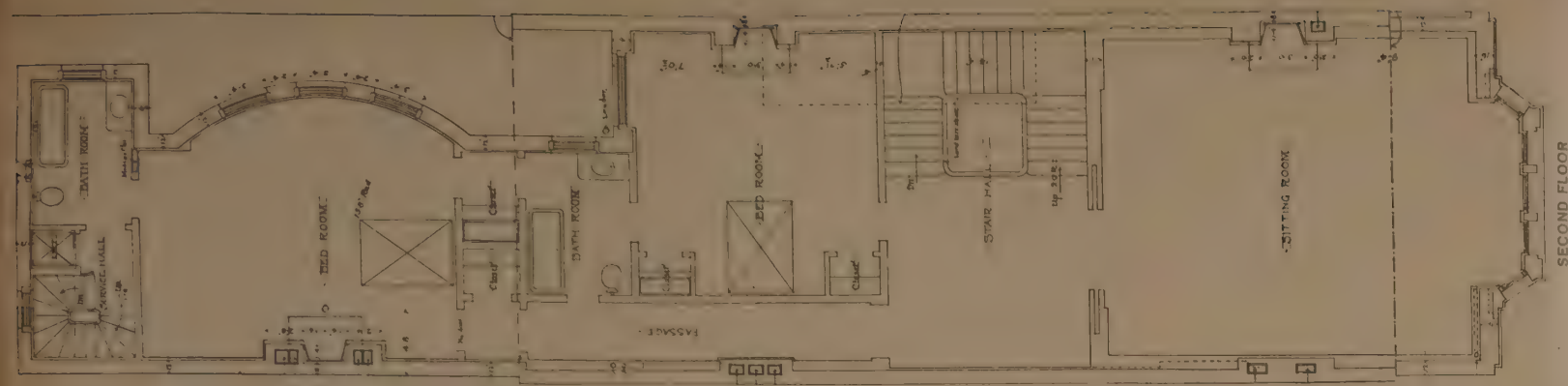
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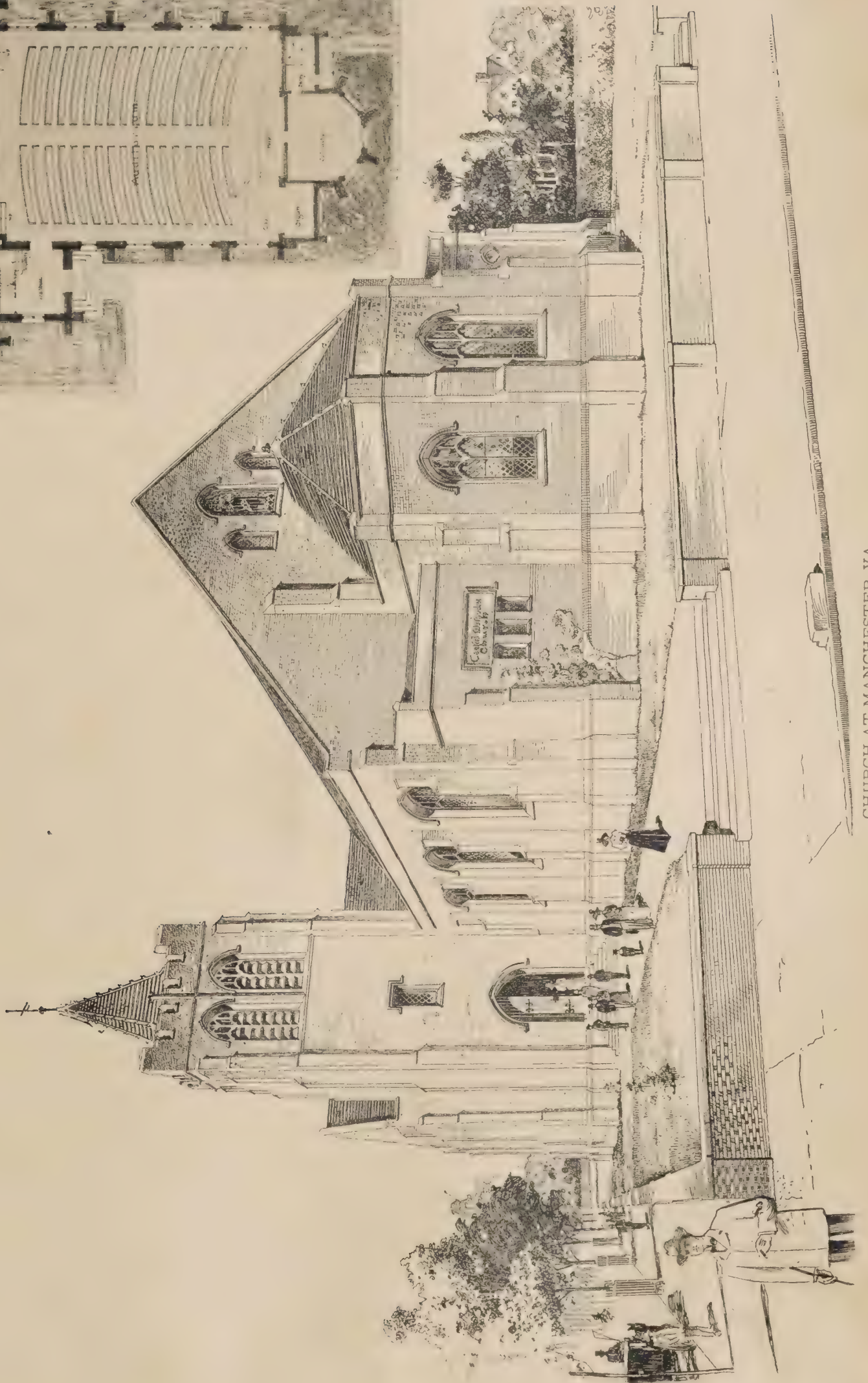
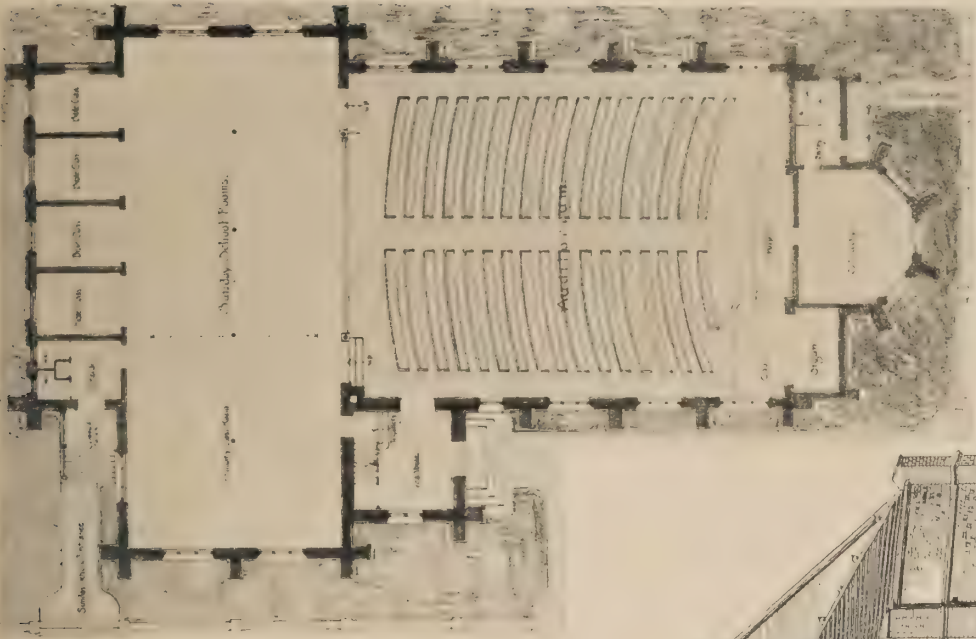






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